JUNE, 1957

American Engineer

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Plus: Honeywell Election News • NSPE Testimony on Professional Classification

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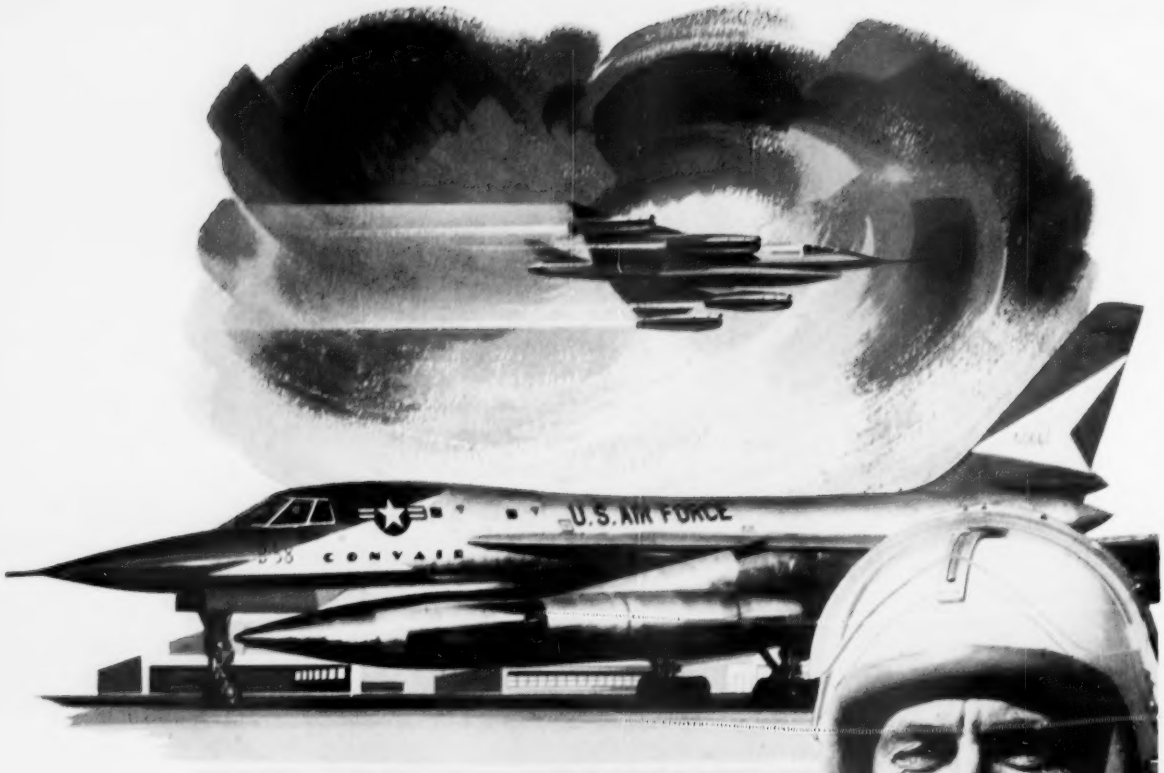

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Letters to the Editor

Management Chant? . . .

Dear Editor:

Reading "Engineers, Money and Management," by John Moxon (AE, April, 1957) leads me to question your motives. Mr. Moxon ably presented the old story of management which we should all know by heart now: "Work hard to improve yourself in the ways we designate and we will reward you, but, of course, you are not nearly as important as you think you are and the reason you don't get more money is simply that you don't deserve it."

Why do our dues go to implementing this chant of management? The coal miners did not raise their wages by digging more coal. The physician limits his numbers by stringent admission requirements and sends out his bills selectively to make his $24,000 per year. There are many avenues open to the engineer, short of unionization, leading to improved pay and our dues should provide space for their elucidation, rather than be turned over to propaganda.

Why aren't the low pay, marginal organizations listed so engineers won't waste valuable time finding out about them personally? Why take up management's cry for more engineers until they pay the ones they have? Why do we save our employers so much time by our work and yet cannot take off half a day a week to improve ourselves in our profession? If some of us are financially interested in maintaining the depressed conditions in engineering let's get it all out in the open.

Our country is in peril, we need more engineers to save it and their standing in the society must be improved; let's not trick them in. It is going to cost money and the rest of the society is going to have to be satisfied with less. Let us face the issues squarely, "time's-a-wastin'."

F. Gordon Yates, P.E.,
Colorado Springs, Colo.

Off Side . . .

Dear Editor:

Whoever wrote the article on Dallas (AE, May, 1957) must be a "football void." I thought the "Cotton Bowl" was in Dallas, Texas, instead of the "Orange Bowl." The latter used to be in Miami, Florida.

J. R. Reynolds, P.E.
Rome, Ga.

Please!!
It's the COTTON BOWL.

Hugh S. Clarke, P.E.
Dallas, Tex.

Believe that one of your caption writers is mis-located.

W. N. Hammond, P.E.
Fort Worth, Tex.

If you are going to move the Orange Bowl to Texas, I would suggest you move it to Mission, McAllen or Weslaco. This is the orange and grapefruit region of Texas.

By the way, where did you move the Cotton Bowl to?

B. A. Crocker, P.E.
Longview, Tex.

Page 19—Stadium in Dallas is "Cotton Bowl"—not Orange Bowl.

C. H. Page, P.E.
Austin, Tex.

Editor's Note: **AE takes a 15-yard penalty and moves the Orange Bowl back to its rightful place—in Miami!**

The Union Problem . . .

Dear Editor:

The suggestion of A. A. Sackler and J. I. Davis (AE, April, 1957) to bar union members from NSPE constitutes a negative attitude that is apparently shared by a large proportion of our membership, especially in the management level. Bluff and bluster under the disguise of professionalism is fuel for the union bandwagon. To approach the problem of unionization of engineers in this manner is to admit defeat and will lead to the ultimate destruction of NSPE.

The NSPE study of Engineer Salaries in Consulting Firms, May 1957, (1st grade salaries $358.00 and 8th grade salaries $987.54 plus fringe benefits, with less than 50% of non-management engineers registered) points up the union argument that "engineers in management" are doing more to hold engineers down than any other group.

The union organizers can promise higher wages and higher professional standards for engineers and produce them. They can use our standards of registration as the lever to fulfill their promises by maintaining registration as the conclusion of the apprenticeship.

Finally, with the strength of organization, they will set their own standards of registration. The young engineer will be forced into the unions through necessity and the NSPE will become an organization of "engineers in management" dedicated to fighting unions.

We must accept the position as the leaders in professional engineering. Increase membership (union or non-union) and increase registration. To do these things, we must give incentive to young engineers to become registered, give them something more than a certification. . . .

C. E. Imel, P.E.
Los Angeles, Calif.

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Early P.E. to Be Honored At Annual Meeting

In commemoration of the fiftieth anniversary of engineering registration, NSPE will honor one of the first registered engineers at its annual meeting in Dallas, Texas, June 6-8.

Ben C. Bellamy, of Lamont, Wyoming, will be honored at the banquet, Saturday, June 8, as being among the first engineers under the initial state registration law which was established in Wyoming in 1907. Mr. Bellamy will give a brief talk on some of the early experiences of registration in Wyoming.

All indications point to a successful meeting with the Honorable R. L. Thornton, mayor of Dallas, giving an address of welcome on opening day to get the affair underway. President Robert J. Rhinehart will respond for the National Society.

Dallas officials report that the exhibit sale has been successful and, in addition, many firms have expressed interest in playing a role in the affair, including American Airlines and Braniff Airlines. American Airlines will present the ladies with a 3-orchid corsage at the Saturday night banquet. They will also give a gift to both incoming and outgoing NSPE officers and directors.

A late change in the panel of the conference on young engineers in industry, scheduled for June 7 has been announced.

J. E. Ross, chief engineer, The Dow Chemical Company, Texas Division, Freeport, Texas, has replaced Dr. F. C. Peterson as a panel member.

Some of the highlights of the twenty-third annual meeting will be:

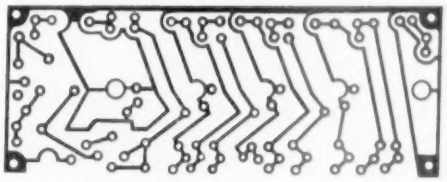
—Presentation of 1957 NSPE award to Granville M. Read, chief engineer for E. I. du Pont de Nemours & Company.

—A state awards luncheon June 8 featuring an address by Congressman Bruce Alger of Texas.

—Petitions for affiliation by the Wyoming Society of Professional Engineers, the South Dakota Society of Professional Engineers and the Canal Zone Society of Professional Engineers.

—Installation of new NSPE officers.

Following the Executive Committee session on June 5, the meeting will continue at the Statler-Hilton Hotel with three days of professional meetings and a series of conferences on professional development for young engineers.



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If you qualify for any of these representative positions, we invite you to contact the Manager of Engineering Industrial Relations, Northrop Aircraft, Inc., ORegon 8-9111, Extension 1893, or write to: 1015 East Broadway, Department 4600-G, Hawthorne, California.

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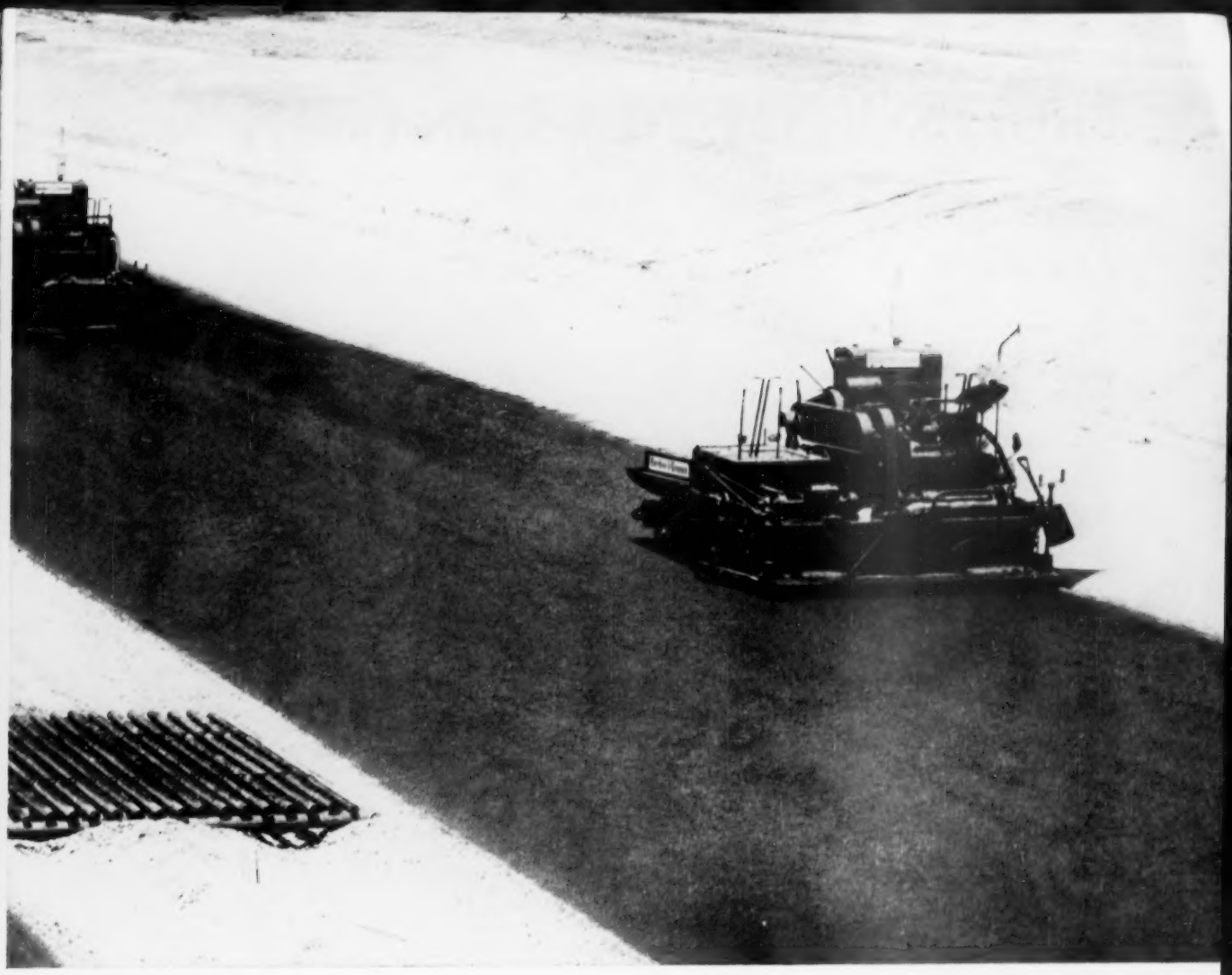

Construction Scene on Kansas Turnpike

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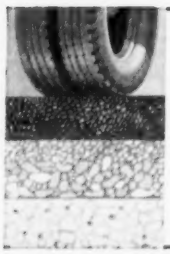

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(Circle 3 on Inside Back Cover)

PROFESSIONAL NEWS IN CAPSULE FORM

A Roundup of Late Events for Professional Engineers

Wife Assumes Presidency Of Firm; Becomes Member

Following the recent death of her husband, Mrs. Roland R. Miner, of Greeley Colo., has assumed his duties as president of Miner and Miner, Consulting Engineers, Inc., and has forwarded NSPE headquarters a membership application in her name.

Mrs. Miner, a graduate engineer, stated in a letter enclosed with the application that she had not become a member previously because it seemed that one member in the family was sufficient. The consulting firm was formed eleven years ago as a husband-and-wife partnership which they later incorporated.

Active in all phases of the work since its beginning, Mrs. Miner plans to continue the business. About twenty people are employed by the firm.

Montreal to Host 2,500 Engineers at June Meet

The City of Montreal, Quc., will be host to 2,500 engineers of Canada, the United States and Mexico at the American Institute of Electrical Engineers five-day summer general meeting June 24-28 in the Sheraton-Mount Royal Hotel.

The 73rd annual meeting of AIEE will be held on the first day of the affair and will be marked by the announcement of the 1957-58 officers, three new directors and a treasurer, and presentation of the 1956 Lamme Medal to Dr. H. H. Beverage, director of the Radio Research Laboratory, Radio Corporation of America. The meeting will be presided over by Institute president M. S. Coover, administrative assistant, engineering division, Iowa State College, Ames, Iowa.

The meeting's technical program will be supplemented by inspection trips to area industrial installations, entertainment, and a full schedule of activities for the distaff side.

Award $138,000 in Grants To Eighteen Schools

Grants totaling $138,000 have been awarded by the National Science Foundation to eighteen colleges and universities in the United States and its territories to support in-service institutes designed to improve the training of high school teachers of science and mathematics.

In-service institutes will begin in the fall of 1957 and will run through the academic year 1957-58. Each will offer special courses in the subject matter of science or mathematics especially designed for the needs of high school teachers. Institutes will be held in the evenings and on week-ends in order that teachers may attend them outside regular teaching hours. Travel expenses, tuition, and fees for each participant will be covered by the grant from the National Science Foundation. Participants in each institute will be selected from high school teachers within a radius of some fifty miles of the host institution.

This program is an experimental extension of the current NSF programs of summer and academic year institutes for high school teachers.

"I Quit!"

Design Special Slide Rule For Blind College Student

A specially-designed slide rule—easy to read by touch and probably the first of its kind ever to be made—has been produced for a blind engineering student at Manhattan College by the Keuffel & Esser Co., of Hoboken, N. J., manufacturer of precision instruments.

Built for a sightless sophomore student of electrical engineering, John "Skip" Courtney, of Rockville Center, Long Island, the unique instrument employs tactile symbols in the form of raised brads systematically arranged and hammered into a 20-inch regular Log Log Duplex Decitrig slide rule.

Different in design from the standard Braille circular device used by blind students of mathematics, Mr. Courtney's slide rule is equally perceptible to touch but better enables the blind student to handle the more complicated higher mathematics needed in electrical engineering.

Dr. D. B. Steinman Slated To Receive Gzowski Medal

Dr. D. B. Steinman, prominent NSPE member, is among the persons to receive an award at the annual meeting of The Engineering Institute of Canada on June 14 at the Banff Springs Hotel, Alberta. The presentation will be the last function of the 71st general and professional meeting of the Institute.

Dr. Steinman will receive the Gzowksi Medal, named after one of Canada's greatest engineers of the last century, for a technical paper entitled "The Design of the Mackinac Bridge."

The Society of American Military Engineers presented Dr. Steinman with the George W. Goethals Medal in May at its annual meeting in Washington, D. C. Dr. Steinman was the first recipient of the award in recognition of his eminent and notable contributions and improvements in bridge engineering design and construction.

Engineers Predicted As Management Personnel

Engineers will be one of the primary sources for management personnel of the future, it was recently predicted.

This will be because of his training and the increasingly complex nature of modern civilization, A. J. Morgan, of the University of Dayton Research Center, told a symposium on management during the East Central and Middle Eastern district meeting and air transportation conference of the American Institute of Electrical Engineers.

Basically, he said, the necessary qualities for management are fundamental intelligence, emotional stability, an understanding of people combined with ability to cope with their problems, integrity, health, and enthusiasm.

These, he continued are fundamental, but the following executive skills are required of the true manager: logical thinking, creative thinking, sense of money, organization of time, and social sensitivity.

The engineer, by reason of his training, possesses at least three of these fundamentals — fundamental intelligence, logical thinking, and creative thinking and thus "maintains a distinct advantage over other candidates for a managerial position," he observed.

❁

NSF Grant to Aid Study of College Teaching Problem

A $10,000 grant of the National Science Foundation will support the first phase of a comprehensive study of how American engineering colleges may attract and keep topflight engineering teachers for their growing number of students.

The American Society for Engineering Education, sponsor of the project, says the NSF grant will be used for preliminary work on a study "to determine and describe in detail the character and magnitude of the manpower and related financial needs of engineering colleges" and for organizing a full-scale attack on the problem.

When these needs are better understood, the Society's project will go on to identify and specify the problems to be solved in meeting these needs, to determine and describe the special opportunities, satisfactions, and problems of engineering teaching, and to formulate the conditions which engineering colleges must fulfill to attract and develop good teachers for their faculties.

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(Circle 4 on Inside Back Cover)

H. M. Christman Receives Trinks Award at Banquet

Howard M. Christman, president and technical director of Massillon Refractories Company, Massillon, Ohio, has received the Trinks Award, highest honor of the industrial heating industry, for his pioneering developments in refractory brick for furnaces.

The presentation was made to Mr. Christman, a member of the National Society, at the recent seventh annual banquet sponsored by the Trinks Industrial Heating Award Committee, which is composed of leading authorities in the industry.

AIEE Cooperates With Other Groups For Meet

A conference on magnetism and magnetic materials will be held in Washington, D. C., on November 18-20 by the American Institute of Electrical Engineers in cooperation with the American Physical Society, the American Institute of Mining and Metallurgical Engineers, the Institute of Radio Engineers, and the Office of Naval Research.

Authors should submit titles of proposed papers by July 1 and abstracts by August 15. For further details write: L. R. Maxwell, U. S. Naval Ordnance Laboratory, White Oak, Silver Spring, Md.

F. E. Terman Chairman Naval Research Comm.

Frederick E. Terman, Stanford University provost and dean of the School of Engineering, has been elected 1957-58 chairman of the Naval Research Advisory Committee, the senior scientific advisory group of the U. S. Navy.

He succeeds Julius Stratton, chancellor of Massachusetts Institute of Technology, and will have serving with him as vice chairman Dr. C. G. Suits, vice president and director of research of the General Electric Company.

Appointed by the Secretary of the Navy, the committee of fifteen civilians "pre-eminent in the fields of science, research, and development" is advisory to the secretary, the chief of naval operations, and the chief of naval research. Provost Terman was appointed to a three-year term in 1956.

Research Corp. Grants $164,183 to Aid Scientists

Some sixty-four U. S. scientists received a total of $164,183 during the first three months of this year to help them investigate unexplored questions in the physical sciences.

The grants, which are made quarterly by Research Corporation, were distributed in the 1957 first quarter to scientists teaching in twenty-three colleges and thirty-six universities in the U. S., Hawaii, and Canada, Charles H. Schauer, director of grants, has reported.

Research Corporation grants, Mr. Schauer explained, are aimed chiefly at initiating worthwhile fundamental research in science where, because often new and sometimes bold ideas are involved, support is hard to get. These grants, he explained, aid investigations in chemistry, physics, astronomy, mathematics and engineering.

Research Corporation, a non-profit foundation, was established in 1912 by Frederick Gardner Cottrell with the gift of his patent rights in the field of electrical precipitation.

Newark College to Take Part in Westinghouse Plan

Robert W. Van Houten, president of Newark College of Engineering, has announced that starting in September NCE will participate in the Westinghouse graduate education program in addition to the undergraduate program now in effect at the college.

Representatives of Westinghouse offices and plants in New Jersey met recently with company and college officials to discuss the details of the plan.

Under the program, operative in nineteen colleges and universities throughout the country, Westinghouse offers its 130,000 employees tuition refunds for undergraduate and graduate courses taken toward academic degrees in engineering, physics, mathematics, or business administration. Since the plan's inception in 1939, more than 8,000 Westinghouse employees have participated in the undergraduate program, and more than 400 have obtained advance degrees. In New Jersey, the plan is also in effect at Rutgers University and Stevens Institute of Technology.

Society Slates Semi-Annual Meeting in June

The semi-annual meeting of the American Society of Heating and Air-Conditioning Engineers will take place in the Manoir Richelieu, at Pointe-au-Pic (Murray Bay), P.Q., Canada, June 24-26.

There will be six technical sessions including a Symposium on Air-Conditioning Instrumentation and one on Sound and Vibration—fourteen papers will be presented at the sessions.

Clemson College to Give Degree to Dean McMahon

John F. McMahon, an NSPE member, is among four men scheduled to receive honorary Doctor of Engineering degrees at June Commencement exercises at Clemson College. He is dean of the New York State College of Ceramics, and was recently elected president of the American Ceramic Society.

Others honored include Allen Stanley Bedell, chairman of the board of directors, J. E. Sirrine Company, Greenville, S. C.; Robert C. Blair, manager, Savannah River Operations Office, U. S. Atomic Energy Commission, and Claude R. McMillan, chief commissioner, South Carolina State Highway Department.

Standards Engineers Society Meets in Sept.

Standardization — Economy Through Application is the theme of the sixth annual meeting of the Standards Engineers Society, being held at the Hotel Commodore, New York, September 23-25.

How standards can be applied by management to solve many problems of purchasing and production for greater economy and more profits will be emphasized in sessions featuring various phases of standards application. These will include materials, electrical components, mechanical components, and electronic circuitry, among others. Sources of information on standards will be considered, and problems of company organization for best use of standards will be presented with possible solutions. The relatively new problem of "reliability" will be the subject of one of the sessions.

Stevens to Construct New Engineering Bldg.

Stevens Institute of Technology has begun construction of a modern, seven-story science-engineering building, it has been announced by Dr. Jess H. Davis, president of the college.

The proposed $2,000,000 structure will gather under one roof the Institute's departments of Physics, Metallurgy, and Electrical Engineering, in an effort, Dr. Davis said, to foster a closer working relationship between scientists doing research in different disciplines. The building is expected to be ready for occupancy by the fall term of 1958.

Applied Mechanics Meet Scheduled June 13 to 15

The twenty-first National Applied Mechanics Conference, in which experts in various fields of engineering from all parts of the country will take part, will be held at the University of California, Berkeley, June 13-15, following the semi-annual meeting of The American Society of Mechanical Engineers in San Francisco. It will be sponsored by the Applied Mechanics Division of ASME.

Forty-five technical papers will be included on the program, in addition to inspection trips to the University of California Radiation Laboratory and the Rarefied Gas Dynamics Laboratory.

General chairman of the Conference Committee is Professor Walter W. Soroka, University of California.

Young Engineering Talent To Obtain Recognition

Recognition and encouragement of young engineering talent will have a formal part of the program for the 1957 Western Electronics Show and Convention, August 20-23, at San Francisco, Calif.

Taking the form of a special exhibit in connection with the technical program and trade show at the Cow Palace, WESCON-1957 will give attention to electronics and allied-field projects developed by secondary school students for local and regional science fairs in the western states this spring.

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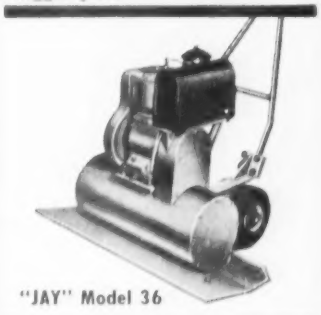

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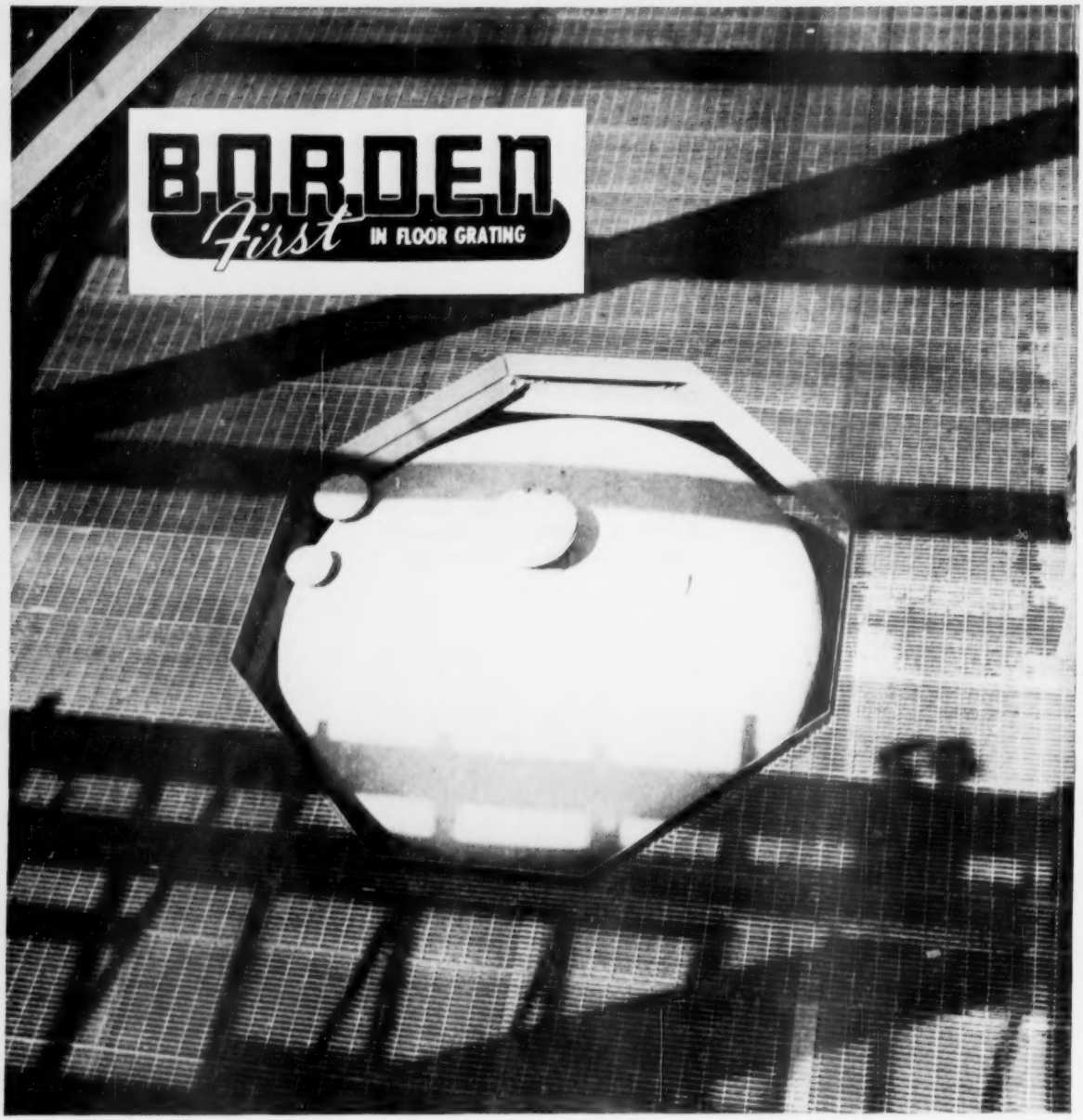

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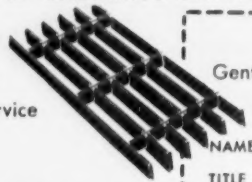

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(Circle 6 on Inside Back Cover)

American Engineer

The Magazine of the Registered Professional Engineer

VOLUME TWENTY-SEVEN NUMBER SIX

More Needed . . .

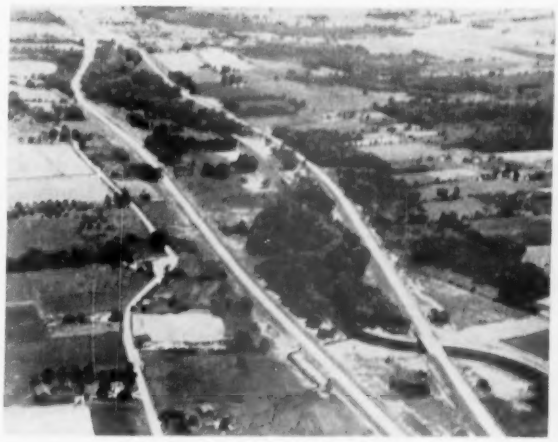
▲ The New York State Thruway near Sprakers in the Mohawk Valley. Here the Barge Canal was cut back on the left, filled on the right to make room for the Thruway. State Highway 58 was moved close to base of the hill.

Eastbound and westbound lanes sweep 800 feet apart on ◀ opposite sides of the Canandaigua Lake Outlet on the Thruway, an example of variety used by designers to hold driver interest, avoid monotony.

▼ The Thruway near Rochester, looking west. The overpass just beyond the trees standing in the 74-foot mall is unique on the Thruway. Its distinctive curving arches invariably attract attention. Typical Thruway grade separation structures have four spans, straight overhead lines and inconspicuous columnar piers set well back from the traffic lanes.

• **An AE Staff Report** •

Technical-Civic Responsibilities Face Engineers in Road Program



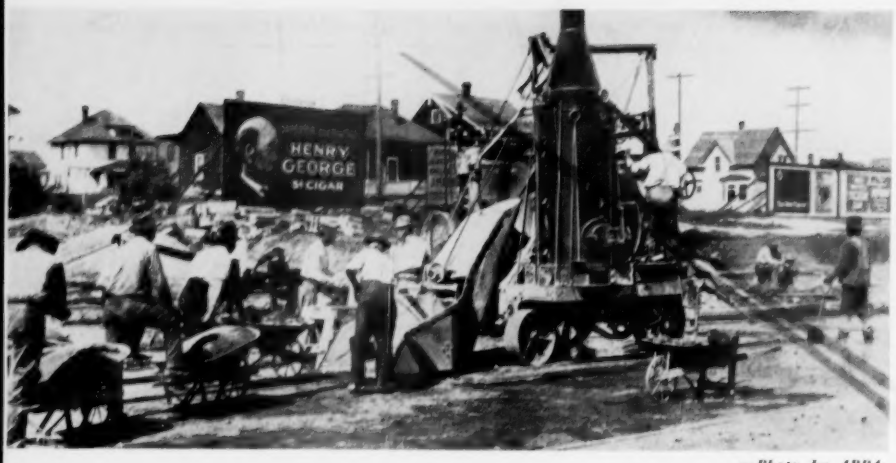
Q. What is one of the greatest challenges now facing a large segment of the engineering profession?

A. The now underway $50,000,000,000 Federal aid highway program scheduled over the next 13 to 16 years.

THE extent to which the profession meets this challenge may well determine the quality of automobile transportation in this country a decade and a half from today—a time more likely than not to see a nation populated by 225,000,000 Americans and a need for roads to handle at least 100,000,000 vehicles.

The case for the magnitude of the challenge that the Federal aid highway program has for the engineering profession can perhaps best be seen in the role now being played by a professional engineer named Bertram D. Tallamy—the man President Eisenhower appointed as Federal Highway Administrator.

Coming down from New York State, where he was



This was the era of the 5¢ cigar and steam concrete mixers. The mammoth new highway program will call for many technological advances but will also require of the professional engineer a "public relations" job at the local level to "sell" the highways.

—Photo by ARBA.

chairman of the Thruway Authority and thus the prime executive in that State's magnificent cross-state Thruway, Administrator Tallamy has plunged into Washington's high-level bureaucratic seas and set sail through waters beset by such shoals as committee hearings, Congressional maneuverings, and other assorted problems ranging from state highway department finances to the regulation of billboard advertising along the interstate highway network.

From his desk in the Bureau of Public Roads, Tallamy can look across a broad, carpeted office to a wall map of the United States showing a 41,000-mile network that will link together—for non-stop driving—every major city in the land. As Federal Administrator, Tallamy is directly responsible for the supervision of this approximately 27-billion-dollar interstate system, just as he is also responsible for the rest of the Federal aid program, which will involve construction and improvement of city freeways, farm-to-market roads, rural routes, and other designated roads.

"It is a grand plan," Tallamy likes to point out as he discusses the extent of the roadbuilding program which, for the interstate system alone, entails the equivalent of paving a multi-lane superhighway more than 1½-times around the planet earth. To get this "grand plan" out of the planning stage and into actual miles of completed highways, Tallamy is looking to the engineering profession for much of the driving force. His own activities in Washington may be taken as a mirror reflection of the kind of responsibility engineers are going to have to shoulder in the project at the local and state levels.

Federal Highway Administrator Bertram D. Tallamy, left, discusses the nation-wide roadbuilding program in his Washington, D. C., office with Kenneth E. Trombley, editor of the AMERICAN ENGINEER, and Paul H. Robbins, NSPE executive director.

Since his confirmation by the Senate in February, Tallamy has testified through many hours of Congressional hearings. Much of this time was taken up by the problem of how to control billboard advertising along the new highways. Tallamy views the "nesting" of billboards along thruways as "highly detrimental" to safety and aesthetic considerations, and he testified in support of the Administration bill which would cause those states not controlling billboard advertising to lose five per cent of the Federal matching funds. Tallamy feels that his appearance before Congressional committees is a reflection of what engineers all over the country will have to do at local hearings in order to get across to the public the reasons behind the high professional standards for the Federal aid highways which have been incorporated in the minimum standards set up by the Bureau of Public Roads.

"The engineer has a real public relations job ahead in telling the people what the new highways mean in terms of safety and transportation," Tallamy points out. The Administrator sees this public relations task as particularly important in such phases of the program as acquiring land rights-of-way, limited access, and location of routes. Tallamy is emphatic in stating that engineers are the only ones really qualified to explain the advantages of modern concepts in highway planning and design. "Engineers must be prepared to come out into the limelight of public attention and participate in the many zoning and right-of-way hearings that will be a necessary part of the over-all program," he states.

In shouldering what he feels to be his own end of the public relations responsibility, Engineer Tallamy has appeared before innumerable groups to speak in behalf of the values of the Federal aid program. He has also maintained an open-door policy for the press, with the result that newspapers and periodicals have given wide circulation to comments on the highway program from the point of view of a professional engineer. He believes that the chief reasons for public opposition to some phases of the program—planned access to the interstate

When the new, modern expressway, top right, was going to be cut through this quiet community, the opposition was no doubt pronounced. The engineer, with his unique background, can do much to explain to local citizens many of the "why's" of roadbuilding.

—Photo by U. S. Steel.

highways, for example—center around a basic lack of factual information about what a modern thruway means in terms of stimulating land values, attracting desirable industry, and reducing traffic hazards and conjestion. The professional engineer has this information, Tallamy points out, and should be prepared to appear before all interested local groups.

But Tallamy is convinced that the public relations responsibilities of the Federal Highway Administrator are by no means confined to the general public. The engineers in the state highway departments have become the targets for a goodly share of the Federal Highway Administrator's public relations efforts. Tallamy devotes a large amount of his time to meetings and conferences with state highway engineers. At these sessions the Administrator uses the art and skill of what he terms "gentle persuasion" to keep the states' programs moving along. Such meetings with state highway officials are usually preceeded by some preliminary persuasion on the part of the regional and district offices of the Bureau of Public Roads. Keeping the state projects up to schedule means avoiding the unpleasant public relations situation which would doubless arise if expensive new multi-lane highways were left at a dead end at state lines.

When persuasion fails, or when conditions warrant drastic action, the Federal Highway Administrator is authorized by Congress to take whatever steps might be necessary. Already he has cut off Federal funds to one state pending the investigation of charges of wrong-doing in right-of-way land transactions.

In his work with state highway engineering personnel, Tallamy is up against one of the more thorny problems of the whole highway program. This, of course, is the current critical engineering manpower situation. With state highway departments sorely beset for an adequate supply of young graduate engineers, how are enough engineers going to be found to handle the work load brought on by a greatly expanded highway program? Tallamy views this problem as difficult, but by no means desperate. In his thinking, the manpower problem is more a question of developing and bringing up to date the potential of the various highway departments as they are now, rather than one involving the hiring of large numbers of additional engineers. In this approach, the Administrator echoes the often-heard criticism in recent years that state highway engineering offices have fallen far behind in utilizing their professional engineers to the fullest extent. Many observers have found that state highway engineers are bogged down with heavy work loads of sub-professional and even clerical detail.

Tallamy and BPR officials are engaged in a nationwide campaign to stimulate state highway departments to "modernize" engineering utilization. This entails such things as the use of electronic computers for routine calculations, photogrammetry, the training and use of sub-professionals to supplement the professional engineer staff, and the organizing of department procedure so as to relieve the engineer of all clerical duties.

Some states have already acquired electronic computers, and many more have indicated an interest in having them, or participating with neighboring states in a joint program. Tallamy considers the widespread use of computers as an integral part of modern highway planning. He sees these devices as having particular application to such areas as base closures, structural work, establishing line and grade, locating points of curvature, and computing the length and amount of grade. Used in conjunction with photogrammetry, Tallamy points out, the centrally located computers should greatly increase the productive capacity of a highway engineering office.

"The electronic computers will enable professional engineers to become more professional," Tallamy says. He maintains that the computer operators, under the supervision of the engineering staff, will free engineers from many man-hours of hand calculations. Tallamy describes the Bureau's role in promoting the use of computers as of vital importance in the over-all planning picture. The Bureau is currently advising state highway departments as to what other states are doing in this area. The Bureau is also busy setting up computer programs for states requesting this service, and a computer program library has been set up in Washington.

"We receive a steady flow of inquiries from the states on computer programs, traffic analysis, and other technical and policy matters," Tallamy says. By acting as a central information point, the Bureau hopes to augment the engineering services available to any one state highway department.

When Administrator Tallamy leans back from his desk to discuss the engineering manpower situation, he quickly dispels the idea that electronic computers, or any other one item, will solve the manpower problem. In his approach, the Congress has provided the mechanism for financing a great and much needed engineering program.

Electronic data processing systems are being counted on to save many thousands of engineering man-hours by relieving professional engineers from much of the routine computation work involved in highway planning and design. The IBM 704 system pictured here was recently used in a demonstration in which the actual computing time was 40 seconds to calculate the direct and indirect effects on the national economy of the fifty-billion-dollar Federal aid road building program. Highway Administrator Tallamy views the use of electronic computers by highway engineers as an opportunity for the "professional engineer to become a real professional," as the routine calculating work can be handled by sub-professionals—under the direct supervision of the engineering staff.

He takes the position that the engineering profession will simply have to rise to the challenge—and in so doing it will have to call upon the most up-to-date techniques for getting the job done. Tallamy holds that there is little to be hoped for in merely sitting back and decrying the lack of graduate engineers going into the highway and structural fields. This is a negativism, he feels, which is not at all in keeping with professional attitudes.

The magnitude of the Federal aid highway program is cited by the Administrator as something that will in itself tend to attract more young engineers into the field. "I believe that there is every bit as much romance in civil engineering as in the other, newer fields," Tallamy says. He points to the fact that many state highway departments are now paying higher salaries for beginning positions. "This is a good start and indicative of future progress," he says.

In its efforts to hurdle various engineering manpower obstacles, the Bureau of Public Roads has run into some opposition from the engineering profession. The NSPE Board of Directors recently approved an Engineering Practices Committee report that expressed strong opposition to a Bureau recommendation regarding the employment of engineers on Federal aid highway projects. The Bureau has been recommending a clause in state highway construction contracts that would forbid a consulting engineering firm from engaging any professional or technical personnel who are or have been, during the period of the contract, employees of the Bureau or of state, county, or city highway departments. The NSPE Committee reported that such a policy would have the effect of "freezing highway department employees to their jobs or forcing them out of the highway program entirely."

Although the personnel and general public relations problems would seem to absorb much of the "energy" of the Federal aid program, there does still remain the very real challenge faced by each state highway department in designing roads that will be adequate for the 1970's and beyond. Minimum standards for the interstate system of connecting highways have been incorporated into the Federal aid legislation. Administrator Tallamy insists, however, that "practical vision and imagination can't be legislated." He describes the minimum standards as "just that," and not standards that cannot be exceeded by state highway engineers designing local sections of the interstate system.

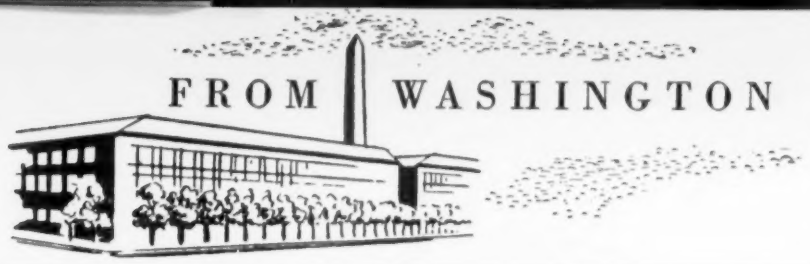
THE values of having a professional engineer at the head of the new highway program are perhaps best illustrated in the Administrator's testimony before the Senate Public Roads Subcommittee. The Senators have been treated to the rather unusual experience of interrogating a top Federal executive who did not need to be surrounded with "experts" to speak for him in the very area over which he was supposed to be administrating. Tallamy was equipped to give direct and detailed answers to questions involving traffic safety, billboard advertising along high speed thruways, construction schedules, and the like.

Take the billboard problem, for example. Tallamy, testifying with Secretary of Commerce Weeks, told the Senators that it was his considered opinion as an engineer that uncontrolled billboard construction along the interstate system would result in unsafe driving conditions. The Subcommittee thus had professional testimony to the effect that a motorist cannot and should not be expected to keep his eyes on the road ahead and read billboard advertising at the same time. If the Subcommittee recommends against a strong and workable regulatory amendment concerning billboard advertising along the interstate system they will be doing so after having

(Continued on page 46)

Bertram D. Tallamy

Born in Plainfield, New Jersey, in 1901, Bertram D. Tallamy was graduated with a degree in civil engineering from Rensselaer Polytechnic Institute. He became a partner in the firm of Sheehan, Fretts and Tallamy in 1929, and a partner in the firm of Fretts, Tallamy, Senior and Forrestel in 1940. As consultants, the firm specialized in municipal water systems, dams, sewage treatment plants, subdivisions, housing, highway and street construction, and general municipal engineering. Mr. Tallamy was appointed deputy chief engineer of the Niagara Frontier Planning Board, and chief engineer in 1937. In 1945 he was named deputy superintendent of public works for New York State. Governor Dewey appointed him superintendent of public works in 1947, and a member and chairman of the three-member Thruway Authority in 1950. He was nominated by President Eisenhower on January 14, 1957, for the position of Federal Highway Administrator, and confirmed by the Senate on February 1.



By
Milton F. Lunch,
N.S.P.E.'s Legislative Analyst

PAY AND PRESTIGE FOR FEDERAL ENGINEERS

THE Administration has come out flatly against a general increase in the salaries of the Government's classified, postal, foreign service and VA medical employees on the ground that such pay raises would pose the threat of new inflationary pressures. In a letter to Chairman Tom Murray of the House Post Office and Civil Service Committee, Percival Brundage, director of the Budget Bureau, said the Administration is opposed to all of the pending pay raise bills now before the Committee, including the Moss-Gubser bills to provide a separate professional schedule for engineers, scientists and others, with substantially higher pay rates. But, significantly, Brundage added: "There are, however, several special situations in which pay adjustments may well be justified. These are now being reviewed in order that appropriate recommendations may be made to the Congress as soon as possible."

It is quite clear that one of the major "special situations" the Administration has in mind pertains to engineers and scientists, and there is generally-accepted speculation that the Civil Service Commission will soon make some definite recommendations for action to meet the Government's growing problem of loss of present engineering and scientific personnel, as well as the problem of not being able to recruit the professional personnel needed. Among the plans reported to be viewed favorably by the Civil Service Commission are:

- To start college graduates in the professions at grade seven ($4525-$5335) instead of either grade five ($3670-$4480) or grade six ($4080-$4890).
- To give the Civil Service Commission broader authority to adjust upward the salaries of engineers and scientists, by establishing minimum and maximum salaries by grade within which the CSC could set the actual rate.
- To increase the number of super-grades (GS 16, 17, 18) that pay from $12,900 to $16,000, a number of which are held by engineers and scientists.

The minimum-maximum flexible approach, with CSC deciding the salaries within the ranges would, apparently, be similar to the method used for the Department of Medicine and Surgery in the Veterans Administration. Under that arrangement the doctors and dentists are divided into six grades (chief, senior, intermediate, full, associate and junior) with the pay ranges from $10,750-$11,825 for the chief grades, and $5,375-$6,185 for the junior grades. An important factor, however, is that the doctors and dentists (as well as nurses and pharmacists) under this arrangement are required by law to be licensed to practice their profession under a state registration statute. A similar registration requirement for professional engineers has been long advocated by NSPE, but there is still no evidence that the Civil Service Commission is sympathetic to similar requirements for the engineering profession.

Meanwhile, despite Administration opposition to general Federal pay increases at this time, a Senate subcommittee has opened hearings on pending pay bills, including the Senate counterpart to the Moss-Gubser bill, introduced by Senator Olin D. Johnston of South Carolina, chairman of the Senate Civil Service Committee. NSPE has been given permission to testify at these hearings, and will support the separate professional classification bill, plus the recommendation of a registration requirement for engineers. *(Editor's Note: See complete NSPE testimony on page 30).*

The recent report of the Defense Advisory Committee on Professional and Technical Compensation, better known as the Cordiner Committee after the name of its chairman, and president of the General Electric Company, has stirred further interest in this subject. In its second major report, on civilian personnel, the Cordiner Committee notes that the ratio of losses of top scientists and engineers in the Defense Department in 1956 was four times that of 1951, and that in June, 1956, one out of every five electronic, mechanical and aeronautical engineering positions was vacant. "The situation grows steadily worse," the report says. Nine out of ten science and engineering graduates offered jobs in Defense in 1956 declined.

The Cordiner Committee gives two main reasons for the present unhappy situation:

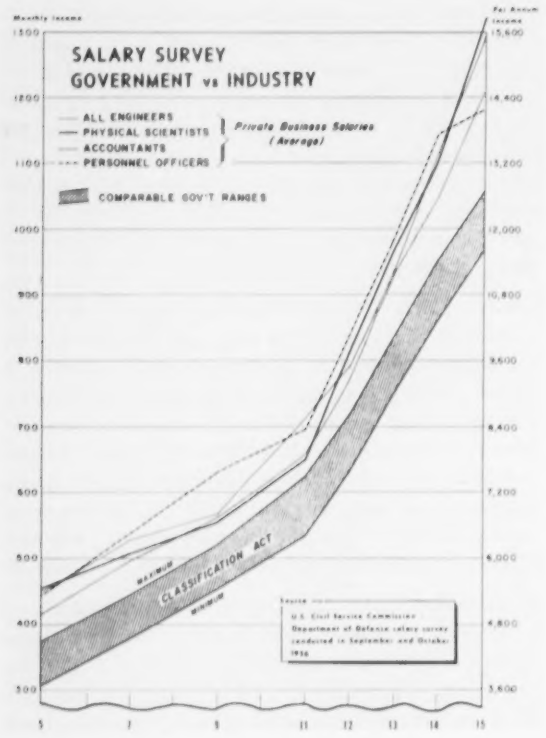
1. Salaries for professional, technical, and managerial

(Please turn the page)

positions in the Defense Department are 15-20 per cent below the salaries for equivalent jobs in industry (see chart). Government fringe benefits do not materially affect this difference.

2. Little is done in the personnel programs of Defense to enhance the prestige of scientists and engineers. Considerable dissatisfaction has been expressed over the low standing of Government scientists and engineers when compared with their industrial colleagues.

On the first point, the Committee recommends that on a long-range basis a joint commission, composed of congressional, executive and public members, should be established to undertake a thorough overhaul of the present Classification Act compensation system. During this study, however, it is urgently recommended that all Defense em-



ployees in grades GS-7 and above be given pay increases ranging from 7.5 per cent to 17.2 per cent. This suggestion has already been rebuffed by the Administration as being too expensive. Obviously, increases for the Defense employees would have to be extended to other Federal employees from a practical and political standpoint. Other pay suggestions of the Committee include changing the Federal starting level for professional occupations from GS-5 to GS-7, a top salary of $19,000, grade differentials which become larger as the grade ladder is ascended and in-grade spreads which tend to increase in the higher grades.

In recommending the increase for all employees above grade seven, the Cordiner group takes sharp issue with the advocates of a separate professional classification system. They argue that under the doctrine of "internal alignment" separate salary schedules for certain occupations "ignore the essential internal pay relationship between groups." Insofar as competitive private business rates are concerned, it is stated, there is little difference between pay scales for scientists and other professionals. "The Committee believes that a separate schedule of pay for professionals or other would violate sound principles of salary administration."

Here is the crux of the issue, not only for Government, but for industry as well to some lesser degree. The Cordiner report opens with a reference to "the technological explosion of recent years . . .," but insists that the persons chiefly responsible for that fact must not be treated differently than others. There is obviously some merit to the "internal alignment" point of view, but the hard political facts of life make the choice clear—adherence to a principle which makes effective action extremely expensive and unlikely of success, with a consequent continued loss of technological brainpower; or a new concept which recognizes that the technological revolution requires a bold new approach which places the key group in a unique position to meet their unique place in modern society.

Under the heading of prestige, the report makes a number of recommendations with which there is general agreement—by-line authorship credit on official reports, opportunity to write, deliver and publish original papers for scientific meetings and journals, opportunity to attend and participate in professional society meetings, opportunity and financial aid in the pursuit of advanced education, etc. Professional prestige or reputation on the local, regional and national level is of greatest importance to the engineer or scientist, the report declares. It recommends also the establishment of an elite corps of civilian scientists and engineers and the improvement of working facilities, with adequate office space for engineers and scientists.

While there would be little dispute over these "prestige" items, the report fails to reach the two basic essentials of prestige which NSPE has contended for over the years—recognition as a distinct group based on intellectual training and knowledge through an independent system of identification and classification, and acceptance of an appropriate qualification system through adherence to the publicly-approved state registration laws.

The odds remain against any Congressional action this year. And so long as the problem of pay and prestige remains in the realm of study only, so long will the Federal agencies have to live with the loss of key engineering and scientific personnel, and the inability to recruit sufficient replacements and additions.

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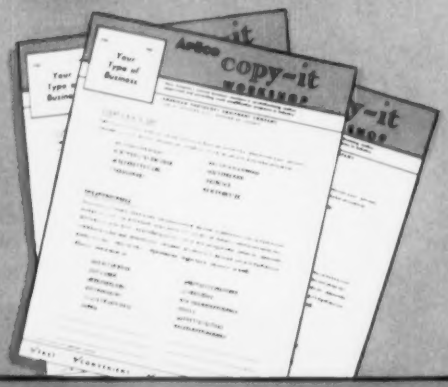

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The Graduate and Industry: The Babcock & Wilcox Story

By W. J. JACKSON,
Sales Engineer, Babcock & Wilcox Co.

SOME of the factors which should be considered when we discuss "The New Engineer and His First Job" can be illustrated by the consideration of answers to several specific questions which we could ask ourselves. Here are two.

1. From industry's viewpoint, what is expected of the engineering graduate?

2. What does industry expect to do with the engineering graduate?

In order to confine our discussion to a reasonable length, it will be necessary to define rather precisely what is meant by *engineering graduate* and *industry;* and discuss the subject matter within these limits.

By engineering graduate, we mean a graduate from one of the engineering schools selected from the *Accredited Curricula* published by the Engineer's Council for Professional Development holding a B. S. degree in one of the basic engineering courses such as mechanical engineering, electrical engineering, chemical engineering, civil engineering, etc. We recognize that there are some schools, not on the accredited list, who also have some excellent men, and they should be included. Our graduate is one who would be interested in joining a company which offers some type of supplementary professional training and education.

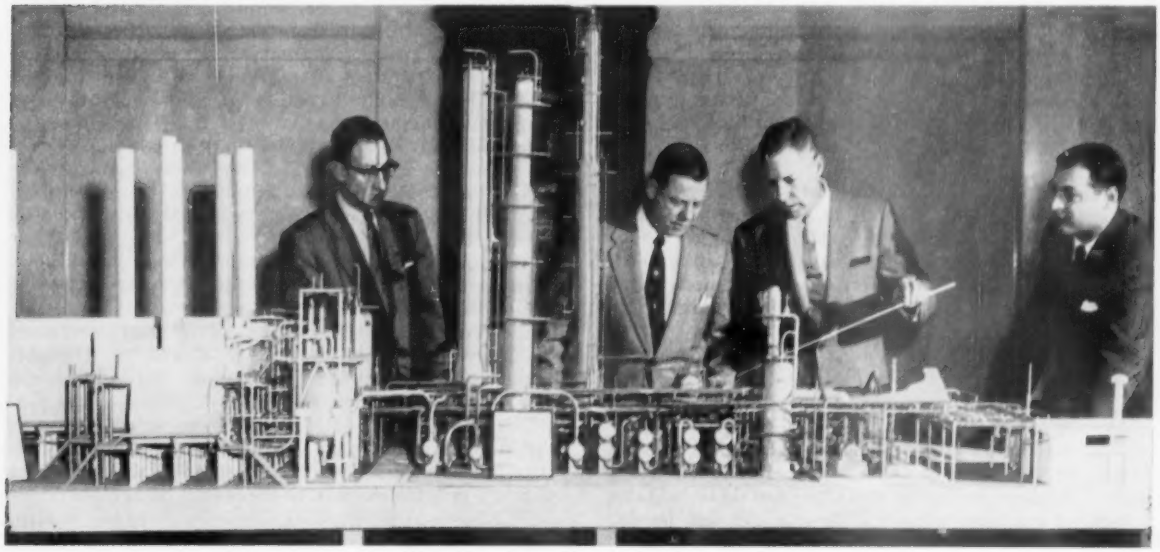
Now, the meaning of the word *industry* is probably so obvious that it needs no explanation, but let's try it anyway. A typical, progressive industrial concern will attempt to have diversified products (or diversified uses for one product). This will not only increase total production but also provide more stability of production. This industry will have keen competition from other similar concerns which wish to make and market the same, or similar, products.

To beat this competition, this company will be continually searching for new products and for ways to make the existing products better. It will be motivated by a spirit of service and progress. This is the dynamic activity to which we refer when we use the word—*industry*.

Now, let's talk about how the engineering graduate fits into this scheme of things.

First of all, perhaps we should re-phrase our first question to read: What would industry *like* to have in the engineering graduate?

Dr. Richard S. Uhrbrock, in his paper entitled, "Recruiting the College Graduate: A Guide for Company



A teaching tool at the New York University College of Engineering is this 12x5x5-foot petroleum plant model built by The M. W. Kellogg Company, New York. The model is on loan to Dr. Charles J. Marsel, NYU associate professor of chemical engineering (far right), for use in his senior class in organic technology. Eventually it will go to The Pure Oil Company, whose Lemont, Illinois, catalytic reforming process unit it represents, for training of engineers in the company.

The B&W engineering employment program is designed not only for those graduates who have well-defined ideas about the type of work they want to do, but also the many others who are not certain of the field for which their qualifications and interests are best suited.

Interviews," lists these desirable characteristics which all students should strive to possess to a high degree:

1. **Makes a favorable impression**
2. **Has energy**
3. **Is mentally alert**
4. **Is interested in work offered by the company**
5. **Is emotionally mature**
6. **Presents evidence of good judgment in discussing past activities and future plans**
7. **Has growth potential, so far as the company is concerned**

This, of course, pre-supposes a satisfactory educational preparation as well.

Another paper entitled "Your Opportunities in Management," published by the National Association of Manufacturers, gives this definition of *executive qualities:* "Technical Knowledge plus Practical Experience plus Top Personal Qualities."

To sum it up, this is what we look for, in my own company, when we recruit students for our training program. Incidentally, we all will find many of these attributes desirable to possess ourselves, whether we are about to look for our first summer job or have been working for forty years.

FUNDAMENTALLY, the students we desire should have the following qualifications: a good basic engineering education; a well-rounded personality; the ability to get along well with their fellow students; a satisfactory appearance and mature conduct; normal emotional adjustment; directed and controlled ambition; and a potential for productive leadership.

That's the goal, and quite a difficult one to achieve, but well worth the effort.

There is almost always more than one good way to achieve an objective, and that is true in this case. The path to be followed by individual students will never be exactly the same, but the destination is common. How much each school, college or university can do to help the prospective graduate achieve these qualities will be determined by the administrative and teaching personnel, as well as plant physical, capabilities. It is hoped that these comments will be of some value in guiding the endless planning and efforts of those involved. It is beyond the scope of this particular part of the discussion to comment in a detailed way about how some of these objectives can be achieved, but here are a few thoughts.

A good, basic engineering education should include, not only courses in mathematics, sciences, specific engineering subjects and laboratory application work, but also good stiff courses in English, composition and public speaking. All the knowledge we obtain is useless if we cannot transmit it properly to our associates. One of the biggest problems industry has today is the maintenance of adequate communications both within and outside a given company.

The student should take several courses which help him become aware of his place in the scheme of things; something to help keep his sights set on the long-term goals ahead. It is important to learn details, but it is also important to know why they're being done. The man who knows *how* will always have a job, but the man who knows *why* will always be his *boss*.

Perhaps the most important objective of all should be the development of great strength of character; to imbue and maintain in the student high principles of conduct and integrity in word and deed in all his contacts with others. Naturally, this is not the job of the schools alone, for it should have started many years ago at home, and such training, by example, should continue throughout the students collegiate and industrial career.

Fortunate is the man who was born with the ability to "think!"

For most of us, however, it is not quite as easy as just reading a sign labeled *think*, but it certainly helps to be reminded of that obligation we owe ourselves and society. One of my former associates in field test work used to say, "The most priceless invention in the world isn't worth a tinker's dam, unless the people who use it think."

How fundamental!

Most schools, colleges and universities are making strenuous efforts to try to develop the ability to think among their students. Sometimes progress seems slow, for it is a latent talent, at best, in many of us, but it will be well worth the struggle.

REGARDING the development and improvement of the students' personality, extra-curricular activities do much to help broaden most students. However, students who are shy and reluctant to participate in some of these outside activities should be strenuously urged to do so. In fact, it might be well to consider making participation in several outside activities a part of the curriculum. Certain psychology courses and possibly a good human relations course will help the student understand himself and others better, thus making him a better person with whom to live.

This may seem like a large order; and it should, for it is. But the student who can acquire and assimilate this kind of training will have taken a long stride forward in learning the art of living.

And now let's answer the question, "What does industry expect to do with the engineering undergraduate?"

First of all, we hope to supplement the education and further develop the personal growth of the students with whom we work. Just how this is accomplished might, again, be best illustrated by an example—for instance, my own company's engineering training program. Other programs may vary in many details; and, I am happy to say, ours does from year to year as we apply the knowledge gained. We believe our efforts are typical of those of many progressive industrial concerns today.

This engineering employment program is arranged to accommodate, not only those graduates who have well-defined ideas about the type of work they want to do, but also the many others who are not certain of the field for which their qualifications and interests are best suited.

The training program is divided into two separate phases:

1. Company-Wide Orientation Program—This eight-week period includes plant visits, lectures, and consultations to acquaint the trainees with B&W operations, policies, products and services and to show where engineers fit into the organization.
2. Divisional Assignment and Training—Upon completion of the orientation program, engineers are assigned to a division determined by the individual's qualifications, needs, desires, as well as the best interests of the company. This assignment may or may not call for additional formal training.

For the company-wide orientation program, lasting about eight weeks, trainees will be brought together in a group at the Alliance, Ohio, Training Center.

The company-wide orientation program will consist of the following parts:

1. A series of talks, followed by informal discussions and question and answer periods, give pertinent information about the company, its business, organization, history and policies.
2. Classroom work covers product lectures which will acquaint the students with the practical problems of design, manufacture and application of the various B&W products.
3. Visits of from one to five days are made to each of the main manufacturing plants of the company. Included also will be visits to the Research and Development Laboratories at Alliance, the Bailey Meter Company's Plant at Cleveland and the Diamond Power Specialty Company's Plant at Lancaster, Ohio.
4. Executive Week consists of talks by company executives on various activities and policies including: management, sales, accounting, purchasing and insurance.
5. Assignment follows individual consultations with the training staff as well as with representatives of appropriate divisions and departments. It is our objective that the immediate future of all trainees shall be scheduled to the mutual satisfaction of the engineer and the company.

Upon completion of the company-wide orientation program, some trainees will be assigned to direct on-the-job training. These will usually be men who have definite and specific ideas about the work they want to do or who have special training which fits them for an available opening. Most of the trainees will enter one of the divisional training courses.

DIVISIONAL training courses are offered by the Boiler, Tubular Products, and Refractories Divisions. The Atomic Energy Division and the Research Center do not have separate courses; men entering these activities take the complete Boiler Division Training Course. The Boiler Division Training Course is typical of the courses given in the other divisions, and is described below.

The Boiler Division designs and fabricates both stationary and marine boilers and component equipment. In addition to boilers, this division also produces many other specially designed products. These include pressure vessels and other special equipment for the Atomic Energy Division, catalytic reactors, fractionators and gasoline towers for the petroleum industry, digesters for the paper industry, pressure vessels and heat exchangers for a wide variety of applications. In addition, thick-wall hollow forgings and steel and alloy castings are supplied to numerous industries.

THE Boiler Division Training Course offers a wide selection of assignments and gives student engineers the opportunity to become acquainted with almost every phase of the division's activities.

1. Erection Assignment—The engineer is assigned to a field erection superintendent in charge of erecting a boiler on a customer's premises. Only one or two engineers are assigned to a job. They have an excellent opportunity to see a boiler in various stages of erection and to observe the arrangement of the different component parts. Experience in erection work constitutes an excellent starting point for a future career in any of the division's activities.
2. Service Assignment—The student engineer is assigned to an experienced service engineer. He assists in putting new equipment into operation, the training of customer's operators, the adjustment of apparatus to meet performance requirements, and the running of necessary tests.
3. Technical Instruction—Eleven weeks of classroom work at the Training Center includes "brush-up" lectures and guided study in subjects pertinent to the heat-power field with special emphasis on heat transfer and fluid mechanics. The principles learned are applied to problems concerning the design of steam generating units and the calculation of their performance. Conferences led by supervisors acquaint the student engineer with the functions of the several departments and their relation to the design, performance and sale of B&W products. Lectures by the company's staff of patent attorneys show how our innovations, designs, methods, and processes are protected. A course in human relations teaches the student how to organize his thinking for the best presentation of his ideas or material, and trains him in the best method in handling difficult situations and personalities.
4. Manufacturing—This nine-week course is offered through the Manufacturing Department at its Barberton, Ohio, works. This program includes participation in work in the shops, where this is feasible, and in the laboratory and offices with ample opportunity for inspection and observation of manufacturing facilities and operations. Included in this assignment are daily lectures on manufacturing processes and engineering applications. During this period, the student engineer will have an opportunity to become acquainted with many of the technical problems of operating a modern boiler manufacturing plant. The subjects covered include: shop manufacturing, production control, product engineering, design practices and procedures, plant

(*Continued on page 46*)

About the Author . . .

W. J. Jackson

W. J. Jackson was graduated from Lafayette College in 1936 with a Bachelor of Science degree in mechanical engineering and received his ME degree from the same school in 1953. He started work for the Babcock & Wilcox Company in 1936 as a student engineer and after a year's training was assigned to the Service Department. He worked as a service engineer for two years and then as an analytical combustion engineer for the next four years. During this time he traveled considerably around the country running heat transfer and combustion tests on practically every kind of boiler his company had made.

Next came two years as an Ensign and Lieut. Junior Grade in the U. S. Navy Reserves. For the past eleven years, Mr. Jackson has served as a sales engineer with the Babcock & Wilcox Company in their Philadelphia district office.

Engineering Employment Practices Digest

A short digest of a monthly bulletin published by the National Society of Professional Engineers in the interest of advancing cooperative relations between professional engineers and their employers. To regularly receive the complete publication which is distributed widely to industrial, commercial and educational organizations, write the NSPE, 2029 K St., N.W., Washington 6, D. C.

✓ **Following the professional victory at Minneapolis-Honeywell, (see complete story in this issue) the two defeated unions are taking stock of their future. Neither UAW nor ESA has announced its plans for further attempts on engineers. The UAW executive council is due to reappraise its ambitious plans soon, and ESA at its annual meeting this month will face the basic split between its "all-professional" and "mixed unit" factions. A UAW spokesman blamed the union's defeat on the "age of conservatism," and the head of the deposed UAW local said the "free speech" provision of the Taft-Hartley Act permitted the company to influence the vote. Establishment of a non-bargaining non-union "sounding board" organization for all engineers at the Minneapolis location of the employer is being studied by the successful "no union" group.**

* * * * *

✓ *A highly significant point which developed during the M-H campaign—UAW's claimed representation of 10,000 engineers in the auto and aviation industries develops, upon investigation, that not more than 100 employees with engineering degrees are on the union list. It was found the union does not represent a single salaried engineer in four of the five major auto companies. The same was found true in two aircraft companies, and in three others the collective bargaining contract specifically excludes salaried professional engineers.*

* * * * *

✓ American Society for Engineering Education and the Midwest College Placement Association have issued "Recruiting Practices and Procedures," as a guide to industry, colleges and students. Employers are urged to avoid elaborate entertainment and to refrain from special payments. The student should be informed by the employer if he will have to join a union, the code states. For the complete code write W. Leighton Collins, Secretary, ASEE, University of Illinois, Urbana—25¢ per copy.

* * * * *

✓ **"Engineers—Creative Thinkers or Mere Technicians," directed to individual engineers, and "Engineers—Assets or Liabilities," directed to employers, have been published by the Kansas Engineering Society to promote professional development. The publications of the NSPE-affiliated state society may be obtained at 15¢ each from KES, State Office Building, Topeka.**

* * * * *

✓ *A regional director of NLRB has dismissed unfair labor practice charges brought by the Council of Western Electric Technical Employees—National (ESA) because the company suspended some strike leaders after a walkout last February. The union has been without a collective bargaining contract for approximately 18 months, the principal issue being over the union's refusal to represent employees it deems subprofessional. The union has now filed a petition for a new election with the NLRB so the professional employees can vote on including the subprofessionals. In 1952 the company and the union agreed on a mixture of professional and technical employees for the unit.*

* * * * *

✓ All parties have now filed briefs in the appeals court on the Kyne Case, testing the right of the NLRB to include some nonprofessionals in a voting unit. The District Court ruled against the NLRB on this point, but the Board claims that the courts are without jurisdiction to review its decision, even if made contrary to a specific prohibition in the law. The NSPE "friend of the court" brief argues that the Board's decision is illegal, and would permit nonprofessionals to control the desires of the majority of the professional employees.

* * * * *

✓ **The Civil Service Commission has issued regulations designed to allow better utilization of professional engineers by defining jobs which technicians can fill. The Commission says the new guides and standards will allow some of the 45,000 jobs now held by professional engineers to be reclassified for manning by technicians. It will also provide greater job satisfaction by freeing the professionals from routine aspects of their present jobs, the CSC said.**

* * * * *

✓ *G. L. Wilcox, president, Canadian Westinghouse Co., Ltd. says that engineers have become a "third estate" in the industrial organization. The old division between "management" and "employee" doesn't work any longer, he adds, because engineers and other professionals aren't really in either category. In an article in* The Engineering Journal, *Wilcox says that proper recognition and status for the professionals will make them more effective and, in the long run, will make engineering a more attractive career for young people.*

MSPE See Threat in Election of Non-Registered Highway Head

By A. C. FRIEL, P. E.,

President, Michigan Society of Professional Engineers

In the State of Michigan the general highway law requires that the State Highway Commissioner be "a competent highway engineer experienced in the administration of highway affairs." The state registration law for professional engineers clearly specifies the conditions which must be met in order to practice as a legally recognized professional engineer.

As many in the engineering profession throughout the country have now learned, we in Michigan have a situation in which the newly-elected Highway Commissioner is not a registered engineer, nor does he have any extensive experience in the administration of highway affairs. And this situation has come about at a time when our highway program is scheduled to develop into an operation on the order of $200,000,000 per year over the next four years.

In view of the seriousness of the matter, it is no exaggeration to say that the engineering profession in this State is faced with one of the most damaging challenges ever made to the whole registration structure. Indeed, it is a challenge which our profession cannot afford to overlook if we are to preserve the legal framework concerning the public service objectives of registration which was erected only after many years of dedicated effort.

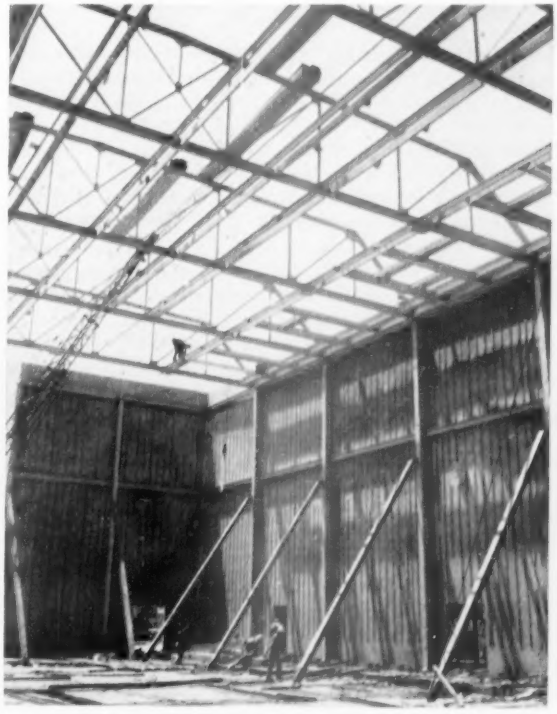
The story of what has happened in Michigan is rather unique in that this State appears to be the only one that elects its Highway Commissioner. However, the clear disregard of the registration law raises the issues in question here to the level of profession-wide interest in all the states.

The sequence of events leading up to the present situation began last February when the Michigan SPE, through its attorney, filed a petition with the State Supreme Court in an effort to prevent the Secretary of State from placing the name of anyone other than a registered professional engineer on the ballot as a candidate for the office of Highway Commissioner. This step was taken, on the advice of our legal counsel, as an aftermath to the nomination by one of our political parties of a county land surveyor as its candidate for the office of Highway Commissioner.

Before filing this petition, our State Society received calls and telegrams from local chapters and individual engineers throughout Michigan urging us to take whatever action was necessary. Legal counsel indicated that time was of the utmost importance if we were to accomplish anything at all. Consequently, the Executive Committee of the Michigan SPE was polled by phone on the following questions:

1. Should the Executive Committee take this decision into its own hands or should the entire Board of Directors be polled.
2. Should we take time to hold a meeting or should we determine what action to take, if any, on the phone poll. (Obviously, a meeting of the entire Board was out of the question, because of the time element.)
3. If the Executive Committee decided to make the decision itself, then each member should cast his vote at that time for or against taking the legal action.

The members of the executive committee finally decided that because of the time element and the cost of polling the entire Board by phone, it was necessary for



The author points out that because of the present case the "engineering profession in (Michigan) is faced with one of the most damaging challenges ever made to the whole registration structure. . . . It is a challenge which our profession cannot afford to overlook if we are to preserve the legal framework concerning the public service objectives of registration. . . ." Without strong registration laws such projects as the construction one shown above could become threats to public safety.

the committee itself to make the decision regarding legal action. The committee voted (four to one) to take the action, and the next day Governor Williams was notified of the Society's intention.

THE Governor stated that he felt the political convention had done what it honestly believed to be best, and he pointed out that he must abide by the opinion of the Attorney General who had decided the surveyor was a qualified candidate for the office.

The petition was filed, but the Supreme Court declined to rule on it. The vote was five to one to deny our petition for an allowance of an order to the Secretary of State to show cause for printing the name of a surveyor on the ballot. The Justice recording the dissenting vote wrote to the Chief Justice, in part, as follows: "If the order (of the Court) is one of denial, my name should be registered in dissent with the statement that I am of the opinion that an order to show cause should be issued."

In 1945 the then Attorney General ruled that an individual must, in order to be considered a competent highway engineer, be a registered professional engineer. That Attorney General was John R. Dethmers, who is now Chief Justice of the State Supreme Court. Thus, it is most difficult to ascertain the reason as to why the petition was denied in view of the law now being so clear on the subject. It is quite discouraging to have an opinion regarding the law written by an Attorney General, and then have the same man as Chief Justice refuse to consider the issue.

The only explanation of the Supreme Court's decision is simply that the Court feels that all matters of this type should be decided by the people at the polls. If they are foolish enough to elect a man who is not registered, the Court will not interfere prior to an election, but will wait until after an election. However, this line of reasoning does not get around the fact that the voters of Michigan have been denied the right to choose between qualified candidates, under the law.

As is now well-known, the land surveyor was elected to the office of State Highway Commissioner in April. His four-year term will begin July 1. Our next legal step will be the filing of a *quo warranto* proceeding questioning his right to serve, after he has been sworn into office in July.

Our State Society strongly believes that the public is entitled to have this very important office held by a man who has the proper qualifications as certified by the legal requirement of having passed the State of Michigan registration examinations. We believe also that the person who directs the affairs of our highway department should be a man who has had many years of experience in the administration of highway affairs as required by law.

One of the principal objectives of the Michigan SPE is to provide the public and the engineering profession with adequate safeguards against unqualified engineering practices. We have done a lot of talking in recent years about professional development. Included among the requirements for the development of a profession is the policing of that profession by its own members.

In our efforts during the past few months, we have had aid and support from many groups. The American Society of Civil Engineers, through its president, urged the Governor and the chairman of the political party involved to nominate a registered engineer instead of a surveyor. The ASCE president's letter to the Governor asked that "we most vigorously urge you to initiate immediate action to have the party represented in this contest by a registered professional engineer. Surely, within the party there are several qualified highway engineers who would actively seek the post."

The Michigan Society of Architects officially endorsed our State Society's legal action. The president of the architects' group wrote us as follows: "The Michigan Society of Architects wishes to join with you in your efforts to make certain that only names of qualified people are placed on the ballot for the position of State Highway Commissioner. We understand that the law states that the State Highway Commissioner shall be a qualified highway engineer, and as such, we feel he should be registered as a professional engineer. It goes without saying that it is the public interest to see that public officials are properly qualified, and in this instance it is obvious that the nominee has neither the certified qualification nor the experience necessary for the position."

The Michigan highway law states that the State Highway Commissioner shall be "a competent highway engineer experienced in the administration of highway affairs." The Michigan SPE has taken issue with the qualifications of the man recently elected for the position.

WE have also had an encouraging amount of favorable editorial comment on our position in the newspapers throughout the State. *The Detroit News* got to the heart of the matter in an editorial which stated, in part:

"Court action appears probable in the renewed controversy over whether John C. Mackie has the legal right to become State Highway Commissioner. A judicial determination seems to us altogether desirable. As pointed out before the election, Mackie is neither experienced in highway administration nor is he a registered civil engineer.

"The argument will be heard that the people have spoken, that the people are sovereign, and that the election returns settled the issue. In reality, the people exercise a limited sovereignty. They may not elect a president of the United States unless he is at least 35 years old by the time he takes office. In most courts they may not elect judges who are not lawyers. If the state laws say what they appear to say, they may not elect a Highway

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N.S.P.E. Believes

SUMMER PLANNING

BY PAUL H. ROBBINS, P.E.

Executive Director

N.S.P.E.

THIS is the time of the year when many of the state societies and chapters, as well as NSPE, wind up a year of intensive activity. While the fiscal year of the Society coincides with the calendar year, studies by Society committees several years ago indicated that a more efficient operation of Society affairs would be accomplished by changing the administrative year as of July 1. The reason behind this move recognized the fact that the summer is a period of lesser professional activity than the fall and winter months, and that this time could profitably be spent by administrative officers and committees in developing and planning programs for the fall.

Several of our states are planning chapter officer and committee workshops as a summer week-end program. Families are invited to attend these affairs, usually scheduled in some resort area, and the men spend the mornings concentrating on the development of programs and activities to be implemented in the fall. For those chapters and state societies whose administrative transition occurs at this time of year, it is encumbent upon the officers to get committees appointed as early as possible and to encourage these committees to be active during the summer months. Committees which delay their planning activities until fall lose valuable time by the inherent lag between committee consideration, approval by the Boards of Directors, and implementation for membership benefit.

Outgoing officers have an extremely important responsibility in the period of administrative transition in properly orienting and passing on to incoming officers and committees necessary information so those responsible for carrying on the activities may not lose valuable time in going over work previously considered.

One unfortunate aspect of transfer of materials is that quite properly the outgoing officer has items which he would like to keep for his own information and reference. This is particularly true of publications and material which may be received from state or national headquarters. NSPE recognizes this problem and encourages its incoming officers to request additional copies of information which may be helpful, with the primary consideration that no current officer be handicapped by lack of available material.

During twenty-five years of Society administration a considerable number of policies have been accumulated. Sometime ago the National Society recognized the need for these policies to be available, not only to officers and committeemen but to members seeking information on a particular subject. A committee was selected to devise two publications—one to contain the adopted policies of the Society pertaining to professional matters, and a second to contain the policies pertaining to internal administration and organization.

The first of these documents was published sometime ago and pertained to professional policies. The internal policy document has now been compiled, and following consideration by the Board at the annual meeting will be published for the information of officers, committeemen and members, as may be requested.

Of course, the basic documents concerning internal policies and organization are the Constitution and Bylaws of the National Society, state society and chapter. In addition to this, the new policy booklet will contain some twenty-five other policies governing such things as the use of the NSPE shield, transfer of membership, student chapters, committee organization, etc.

NSPE believes that an informed membership is a "must" not only for effective administration of the professional society but in order that the true grass roots value of NSPE can be mobilized and the Society at all levels represent the thinking of its membership, which of course is a cross section of the engineering profession.—***End.***

A New Look at Professional Liability Insurance for Engineers and Architects

By JOE E. SMAY, P. E.,

Chairman, AIA Professional Liability

Insurance Committee and Member NSPE

When an individual employs an architect or engineer today, he expects, and obtains, greater competence and reliability than ever before in the history of man. This is brought about not only by various legal requirements for those who would practice the professions, but by a recognition of the members of the profession itself, who recognize the duties and responsibilities to that public which employs them. Laws are increasing which regulate the practice of the profession to a point where now in all states, and territories, the applicant must prove his competence by examinations, experience, or other recognized standards. Courts of law have established precedence through epoch making cases, showing clearly that the practitioner must be competent and reliable before he can so represent himself to the public. When the American public employs such an expert, it demands an ability to protect from errors in not only execution of the regular duties of the profession, but also for errors in judgment.

As the direct result of the work of committees of The American Institute of Architects and the National Society of Professional Engineers, a new Broad Form Architects' and Engineers' Professional Liability Policy is now available to architects and consulting engineers.

This policy was not created by enterprising insurance firms attempting to sell a new type of insurance to the architectural and engineering professions. Rather, it was created by members of the professions who recognize the great need for sound protection in light of modern day conditions.

For many years there has been a steady increase in the number of third party liability suits for bodily injury, property damage, loss of income, loss of services, etc., based on real or imagined damages. This trend has increased since World War II, and has been most noticeable in the increase in claims for damages because of the use of the automobile.

This modern inclination to attempt to collect for real or imagined damages has spread and become a matter of great concern to all engaged in commerce, industry and the professions. In response to the demand for protection against the increased hazards, the insurance industry has, during the past twenty years, made available to commerce, industry and the legal, dental, medical and other professions, additional forms of Public Liability Insurance designed to provide adequate protection for their requirements under present day conditions. But, despite the increase in protection available to others, there was a complete lack of interest on the part of most underwriters in providing sound and adequate protection for the architectural and engineering professions. In an attempt to find a solution to this lack of available protection, the AIA has had a Committee exploring the subject of professional liability insurance for the past eight years. The Committee worked with various insurance agents, and listened to anyone who wished to give advice or make a proposal.

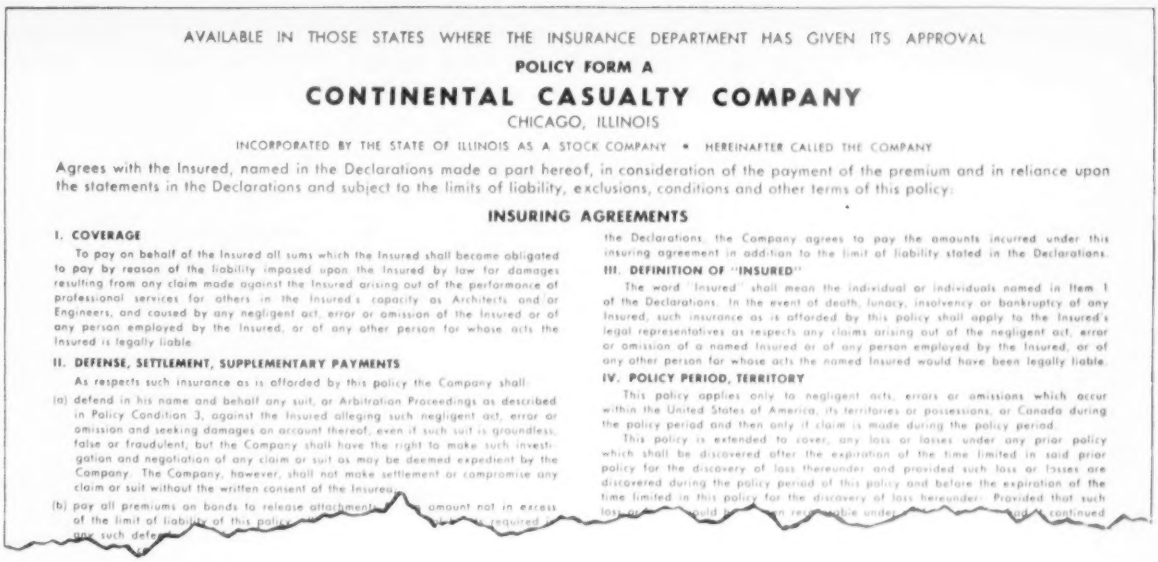
Two years ago, the AIA Committee was placed in touch with the insurance firm of Victor O. Schinnerer & Company, Inc., of Washington, D. C., and then, for the first time, began to get some results in finding domestic insurance companies who would write a Broad Form of Errors and Omissions Insurance for architects and engineers.

In subsequent meetings, representatives of the NSPE participated in the discussions with the AIA Committee. At the meeting of NSPE Directors in November, 1956, Mr. Schinnerer reported developments to the NSPE Committee concerned with exploration of this subject. The available markets were surveyed and a questionnaire was circulated to members of AIA to ascertain their wishes as respects this type of protection. Responses were received from approximately 1,500 firms indicating their strong interest in the proposed insurance. A subsequent questionnaire sent to a selected list of members of NSPE resulted in inquiries from about 750 firms. A surprisingly large percentage of the replies specifically stated that they were interested in a Broad Form Policy.

With this mandate from the membership, the Committee set about to develop a policy form which would provide the maximum protection for the architectural and engineering professions. They made deletions and required additions to the policy submitted by the underwriters so that it would conform to the desires and customs of the professions. Thus, when the new policy was finally written, it accurately reflected the wishes of the Committee and, in many parts, the wording suggested by the Committee.

This new policy provides the finest and most complete coverage ever provided for professional errors, omissions and negligent acts. Most other policies lack one or more items of protection provided by this policy. Some cover as a result of accident only—others provide fairly broad coverage, but lack local service facilities, or are not legally available to agents and brokers in many states. In others the deductible feature applies to the expenses of defense.

The policy also pays all costs of defense and supplementary payments, in addition to the policy limit. In other words, if you have a $100,000.00 limit under your policy, the insuror pays up to that amount, *plus* the costs



AVAILABLE IN THOSE STATES WHERE THE INSURANCE DEPARTMENT HAS GIVEN ITS APPROVAL

POLICY FORM A

CONTINENTAL CASUALTY COMPANY

CHICAGO, ILLINOIS

INCORPORATED BY THE STATE OF ILLINOIS AS A STOCK COMPANY • HEREINAFTER CALLED THE COMPANY

Agrees with the Insured, named in the Declarations made a part hereof, in consideration of the payment of the premium and in reliance upon the statements in the Declarations and subject to the limits of liability, exclusions, conditions and other terms of this policy:

INSURING AGREEMENTS

I. COVERAGE

To pay on behalf of the Insured all sums which the Insured shall become obligated to pay by reason of the liability imposed upon the Insured by law for damages resulting from any claim made against the Insured arising out of the performance of professional services for others in the Insured's capacity as Architects and/or Engineers, and caused by any negligent act, error or omission of the Insured or of any person employed by the Insured, or of any other person for whose acts the Insured is legally liable.

II. DEFENSE, SETTLEMENT, SUPPLEMENTARY PAYMENTS

As respects such insurance as is afforded by this policy the Company shall:

(a) defend in his name and behalf any suit, or Arbitration Proceedings as described in Policy Condition 3, against the Insured alleging such negligent act, error or omission and seeking damages on account thereof, even if such suit is groundless, false or fraudulent, but the Company shall have the right to make such investigation and negotiation of any claim or suit as may be deemed expedient by the Company. The Company, however, shall not make settlement or compromise any claim or suit without the written consent of the Insured;

(b) pay all premiums on bonds to release attachments [illegible] amount not in excess of the limit of liability of this policy [illegible] required [illegible] any such defe[illegible]

the Declarations, the Company agrees to pay the amounts incurred under this insuring agreement in addition to the limit of liability stated in the Declarations.

III. DEFINITION OF "INSURED"

The word "Insured" shall mean the individual or individuals named in Item 1 of the Declarations. In the event of death, lunacy, insolvency or bankruptcy of any Insured, such insurance as is afforded by this policy shall apply to the Insured's legal representatives as respects any claims arising out of the negligent act, error or omission of a named Insured or of any person employed by the Insured, or of any other person for whose acts the named Insured would have been legally liable.

IV. POLICY PERIOD, TERRITORY

This policy applies only to negligent acts, errors or omissions which occur within the United States of America, its territories or possessions, or Canada during the policy period and then only if claim is made during the policy period.

This policy is extended to cover any loss or losses under any prior policy which shall be discovered after the expiration of the time limited in said prior policy for the discovery of loss thereunder and provided such loss or losses are discovered during the policy period of this policy and before the expiration of the time limited in this policy for the discovery of loss hereunder. Provided that such loss or losses would have been recoverable under [illegible] if [illegible] continued

of defense. In most other policies, the $100,000.00 limit would include legal defense costs. Another outstanding feature of the policy is the availability of fully retroactive coverage. This means that, if you wish for an additional charge the policy may be extended to cover all the work you have done before you took out the policy, back to the date when you started to practice, provided the error, omission or negligent act is discovered and claim is made during the policy period. This protection was not available until the new policy was developed.

Other important extensions of coverage are:

The policy provides coverage for the architect and/or engineer, not only for his own professional errors, omissions and negligent acts, but also for the professional errors, omissions and negligent act of all others for whom he may be legally liable in the conduct of his practice. This would include not only other architectural or engineering firms employed to do certain work, but also any other person for whose professional acts he might be held legally liable.

The policy also provides for settlement of claims by arbitration in accordance with established procedures of The American Institute of Architects (AIA Document 305 and provided the named insured is a member of the Institute) or with the rules of the American Arbitration Association.

This is the only available policy tailor-made to the requirements of the Committee, who believe that the cost of the protection is reasonable in light of the broad protection provided.

Of course, there are many who will say that the professional man by ability and diligence should avoid the possibility of legal action for errors, mistakes and negligent acts. While this viewpoint has much merit, it has become increasingly apparent that the complexities of our modern society have imposed the obligation of self-preservation even on those of us whose goal is perfection.

Under our system of government—by law, and not by men, the time may come to all of us when, however right we may think we are, we may be required to defend ourselves in a court of law because some one legally forces us to prove we are right. If that time comes, we can either defend ourselves, or provide ourselves with the means of defense. The newly developed policy provides this defense, and in addition, will pay the damages up to the policy limit, if we happen to be wrong.

For the first time, Broad Form Errors and Omissions Insurance is available to the architectural and engineering professions, in an American company licensed to do business in all forty-eight states of the U.S.A., the District of Columbia and Hawaii, Alaska and Puerto Rico. Thus, the average practitioner, to relieve himself of the frequent worry about what might happen, may insure against such emergencies and devote his best to his client, unhampered with doubts and indecisions because of that worry. Such protection is now available for architects and engineers in the newer forms of professional liability insurance.*

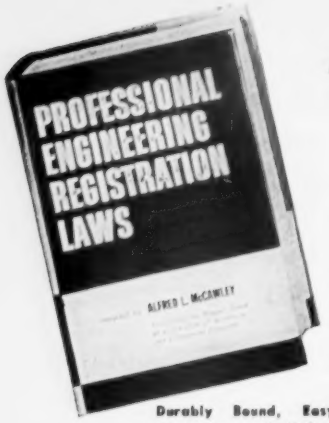
* Information concerning the policy can be obtained by writing to Victor O. Schinnerer & Company, Inc., Investment Building, Washington 5, D. C.

About the Author . . .

Joe E. Smay

Joe E. Smay—shown wearing a hat presented to him by past NSPE president Larry Dresser for outstanding effort and success as membership chairman of the Central Oklahoma Chapter—is professor of Architecture at the University of Oklahoma. Born in Iowa, he obtained his B.S. and M.S. degrees in architectural engineering from Iowa State College. He taught at the College of Engineering, University of Nebraska, from 1923 to 1929 when he moved to the University of Oklahoma to become director of the Architecture Department.

Prof. Smay, chairman of the American Institute of Architects' Committee on Professional Liability Insurance, has served as president of the Central Oklahoma Chapter of OSPE and also as a member of the chapter's board of directors. He is a member of various organizations, including the National Council of Architectural Registrations Boards, Board of Governors of Architects of Oklahoma as well as honorary memberships in Tau Beta Pi and Sigma Tau. Prof. Smay served as captain in the Corps of Engineers in World War II from 1940 to 1942.



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A Compendium of Registration Laws for Professional Engineers in the 48 States, Alaska, Hawaii, Puerto Rico, and the District of Columbia . . .

Here is a volume that belongs on the shelf of every professional engineer's reference library or in the hands of the student engineer. Compiled by Alfred L. McCawley, a recognized authority in the field of professional registration, the book presents, state by state, the exact legal requirements that must be met for professional practice. Laws are cited, and much attention is given to details regarding temporary permits, fees and bonds, educational requirements, and many other factors.

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Just Off the Press!
ENGINEER-EMPLOYER CRITERIA

The Criteria for Professional Employment of Engineers has now been published in booklet form and is being circulated widely to management, government officials, educators, associations and other groups. It is equally important that individual professional engineers be familiar with the content of the new publication.

The major purpose of the *Criteria* is perhaps best summarized by the continuing language from the introduction:

"As most engineers are employees, professional recognition is most significant in its application to the employed engineer-employer relationship. The professional status of the employed engineer, in all of its manifold aspects, needs to be fully recognized by the employed engineer and his employer if full and complete professional growth of the engineering profession is to be developed."

Publication Covers These Subjects:

Criteria for Employers

- **Recruitment Policies**
- **Indoctrination**
- **Technical Development of the Individual**
- **Administrative Development of the Individual**
- **Professional Development of the Individual**
- **Personality Development of the Individual**
- **Company Practices**
  - **Working Conditions**
  - **Salaries**
  - **Engineering Titles**
  - **Personnel Practices**
  - **Termination Policies**

Criteria for Individual Engineers

- **Application for Employment Interview**
- **Indoctrination**
- **Technical Development of the Individual**
- **Administrative Development of the Individual**
- **Professional Development of the Individual**
- **Personality Development of the Individual**
- **Company Practices**
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  - **Salaries**
  - **Engineering Titles**
  - **Personnel Practices**
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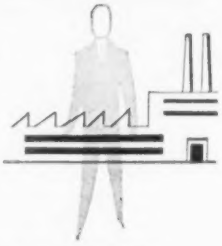
"A PROFESSIONAL LOOK AT THE ENGINEER IN INDUSTRY"



Appearing after more than a year of intensive research and study, this book is a major publication in the engineering-industry field. Brought together in compact form are a wealth of pertinent facts about the background and present situation bearing on the future professional development of engineers employed in all types of industry, and the related effects on all other professional engineers. 128 pages • 6 illustrative charts • 11 tables of economic data • fully documented by more than 250 references • bibliography and index.

Prices: $1.50 to NSPE members. $3.00 to non-members. Orders of over 25 copies: $1.00 per copy to NSPE members, $2.00 per copy to non-members.

Note These Chapter Headings

- The Impact of the Wagner Act
- The Medicine of Taft-Hartley
- Taft-Hartley in Action
- The Causes of Dissatisfaction
- The Influence of Unions
- Professionalism Versus Unionism

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Yes, I am enclosing check or money order for $.....
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.....copies of "Engineer-Employer Criteria" at .....

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Professional Victory in Honeywell Union Election Hailed By NSPE

THE most significant single development in engineering employment practices since the professional provisions were written into the Taft-Hartley Act ten years ago occurred at the Minneapolis location of Minneapolis-Honeywell Regulator Company on May 8, 1957. In an NLRB-conducted election, the professional employees decisively rejected collective bargaining representation bids by two competing unions—the United Auto Workers, AFL-CIO; and the Engineers and Scientists of America, a federation of unions representing engineers and technicians. And despite advance assumptions, the technicians, by a separate vote, also rejected both unions. The vote was conclusive on the first ballot, each group voting "no union" by a clear majority.

Here are the actual voting figures for the two groups:

Professional Employees

Local 1701—UAW, AFL-CIO	304
Engineers & Scientists of America	197
Neither (No Union)	896

Technicians

Local 1701, UAW, AFL-CIO	254
ESA	62
Neither (No Union)	404

In the professional voting unit 1,451 were eligible to vote, with 1,407 actually casting ballots for an exceptionally high 93 per cent. The total pro-union vote for both groups was actually less than the claimed dues-paying membership of the UAW local. Among the professionals, the no-union vote totaled 63 per cent, and among technicians it was 56 per cent.

A preliminary question, for the professionals only, whether they wished their ballots counted with those of the technicians resulted in a vote of 974 "No," and 429, "Yes."

The vote was of national significance because the competing unions made it a recognized key test of strength. For UAW it was the first all-out effort to organize professional employees and for this purpose they created an Aircraft & Avionics Engineering Council with the avowed intent of unionizing engineers and technicians, and amended their constitution to give special bargaining rights to skilled groups. Leading UAW officials stated that the vote was the key to future collective bargaining organization of engineers. For ESA the election was no less significant. For ten years the Federation of Honeywell Engineers had represented the engineering and technician force, and it had been one of the founding groups of ESA in 1952. Earlier this year the union membership (which had dwindled to a minority of those it represented) voted to disaffiliate from ESA and become a local of UAW.

From that date events moved swiftly toward the election. A group of professional employees filed a petition with the NLRB for a decertification election. The company filed a petition for a new election to determine the wishes of the employees. ESA intervened as a party to secure a place on the ballot, intending to establish a new union if successful. The campaign of the competing parties was intensive, with all acknowledging that the result would be of the greatest influence on the future of collective bargaining attempts for engineers. In short, the contentions of the parties were: UAW—engineers must be part of the organized "family of labor" to have effective strength; ESA—engineers need unions to protect their interests but independent of the trade unions; Company—the engineers and the company must work together harmoniously to advance their joint and mutual interests; the Decertifiers—"Before we go plunging down the road to industrial unionism, we believe that a sense of fair play and a scientific seeking of the truth demands that we give Minneapolis-Honeywell the chance to prove to us that we do not need a union."

The voters gave their answer on May 8. Recognizing the national importance of the result to the entire engineering profession, NSPE President Robert J. Rhinehart issued a public statement that the victory for the professional viewpoint "is more than gratifying and welcome; it is a manifestation of our profession's determination to forge ahead on a mutual, cooperative basis without the shackles of unionism and in a truly professional spirit." He said the victory was a confirmation of the soundness of the NSPE policy which has viewed unionism and professionalism as incompatible. "This inescapable fact applies to any and all types of unionization for professional engineers, whether so-called 'professional' unions, or established trade unions." President Rhinehart added that "the future welfare of the engineering profession, and the industry and public it serves, lies in a professional approach through cooperation and the advancement of mutual interests. It is our sincere hope that what happened at Minneapolis after a long and hard struggle will dispel once and for all the idea that some may still have that the professional engineers of this nation will ever adopt a concept alien and antagonistic to their professional obligations and ideals."

In his statement, President Rhinehart said NSPE was proud to have given its full support and cooperation to the professionals through the NSPE-affiliated Minnesota Society of Professional Engineers. He referred to the long-range work of NSPE in the professional employment practices field, through such background publications as the NSPE Engineer-in-Industry Committee's "A Professional Look at the Engineer in Industry," "Criteria for Professional Employment of Engineers," "Engineering Employment Practices Newsletter" (monthly) and similar projects, as well as a number of "situation" experiences and activities in working with professional employees and managements to improve employment conditions of engineers. In connection with the Minnesota situation directly, NSPE participated actively in support of the Minnesota Society's endeavor to protect professionalism, and particularly its Engineers-

(Continued on page 49)

Society Testifies on Separate Professional Classification Bill for Federal Engineers

The following is testimony presented by the National Society before the Subcommittee on Federal Employees Compensation, Senate Committee on Post Office and Civil Service, in support of a separate professional classification system for engineers employed by the Federal Government.

It is a well-known fact today that the agencies of the Federal Government have had the greatest difficulty in recent years in securing the services of engineers and scientists and, in fact, in some cases have lost experienced technical personnel to more attractive offers from industry and other private organizations. It is our opinion that our Federal Government is entitled to and should be in a position to secure the very best engineering and scientific talent which is available in order that our country's interests may be furthered in the fields of national defense, economy and efficiency during these pressing times and in the future. The National Society of Professional Engineers, therefore, strongly endorses and supports the establishment of a system for the separate classification and compensation of scientific and professional positions in the Federal Government, proposed by S. 1326, as the proper approach to a solution of the urgent problem of securing and retaining competent professional engineers in Federal service.

In order to assure an adequate, efficient solution to this problem by the Federal Government, several factors are involved:

The National Society of Professional Engineers believes that professional engineers in Federal service are deserving of professional recognition and prestige. By reason of their advanced training and adherence to a commonly accepted ethical standard imposed by the profession itself as a matter of self-discipline in the public interest, professionals have come to place a high emphasis on their identification apart from strictly occupational classifications. This separate identification is an important ingredient in maintaining and enhancing the morale and service of the professionals. For this reason, the recommendation contained in S. 1326 to place professional employees in a separate scientific and professional schedule, and to designate such persons in the SPS category, represents, in the opinion of the National Society, a recognition that such a professional classification is essential.

It was recently noted by the Cordiner Committee report that professional prestige is of greatest importance to the engineer, and that some of the factors contributing to professional prestige were:

1. Assignment to important and challenging work, and reasonable freedom in its pursuit.
2. By-line authorship credit on official reports written.
3. Opportunity to attend meetings of and become active in scientific and engineering societies with expenses at least partly paid by the Federal Government.
4. Opportunity and financial aid in the pursuit of advanced academic degrees.

The above are but an example of the factors recognized by the Cordiner Committee. In the opinion of the National Society they are logical and well-deserving of consideration. We fully endorse them as essential to the achievement of proper professional prestige for engineers in Federal service.

However, we feel that the most immediate, effective proposition which would attain that degree of professional recognition and prestige so essential to the professional employee, is their assignment to separate schedules and classifications systems as proposed in S. 1326. The elimination of the "P" (Professional) category by the Classification Act of 1949 has led to a decline in morale among professionals, a feeling that the acquisition of specialized knowledge in a profession is no longer regarded as a material factor in personnel decisions.

We sincerely urge that the Subcommittee give favorable consideration to the establishment of a separate classification system for professional personnel in the earnest belief that such action will be a major step toward helping the Government achieve its objective of attracting and holding fully qualified and competent engineers and scientists.

We would like to take the opportunity of placing before the Subcommittee a listing of certain classification series within the engineering group (GS 800-0), plus one other, which are not specifically mentioned as being covered by S. 1326, and which the National Society feels should be included in the Scientific and Professional Schedule. These positions are based on the Civil Service Commission's "Handbook of Occupational Groups and Series of Classes," and represent those classes of engineering positions, the duties of which are to engage in work of a professional nature, and which require professional qualifications. These positions are as follows:

GS 803-0 Safety Engineer Series
804-0 Fire Prevention Engineer Series
805-0 Maintenance Engineering Series
811-0 Construction Engineering Series
819-0 Sanitary Engineering Series
821-0 Highway Research Engineering Series
822-0 Highway Design Engineering Series
823-0 Highway Construction and Maintenance Engineering Series
824-0 Bridge Engineering Series
831-0 Automotive Engineer Series
892-0 Ceramic Engineering Series
897-0 Valuation Engineering Series
1370-0 Cartography Series

These positions, we feel, can justifiably be included in those series on page nineteen of the bill, which would be placed in the scientific and professional schedule.

Voluminous material has been spoken and written concerning the disparity between salaries of Federally employed engineers and those in private industry. This discrepancy has been a major factor in the Government's inability to recruit and retain adequate numbers of competent engineers and scientists. All of this great quantity of information and data contains convincing evidence that an adjustment of the salaries of engineers and scientists in the Federal service is in order and is required if the Government is not to fall further behind in its effort to obtain and retain competent engineering staffs.

Figures just obtained as a result of the salary survey conducted by the National Society of Professional Engineers for 1956 indicate that engineers in the Federal service were paid at a rate of twenty-one per cent lower than private industry. The overall median income of engineers in the Federal Government as shown by our survey was $8,190 compared to $9,870 for private industry. It is also noted that based on the same data the salaries of engineers in the Federal service were lower than those applicable to engineers in public utilities, education, private practice and contractor organizations. The statistical analyses of the data collected in our 1956 survey is not yet quite complete. However, we do expect to have the completed report available next month, at which time copies will be

(Continued on page 45)

National Society of Professional Engineers—Annual Meeting, June 6-8, 1957, Statler-Hilton Hotel, Dallas, Texas.

Delaware Society of Professional Engineers—Annual Meeting, June 13, 1957, Hanna's Restaurant, Wilmington, Delaware.

Missouri Society of Professional Engineers — Annual Meeting, June 14-15, 1957, Hotel Governor, Jefferson City, Missouri.

Michigan Society of Professional Engineers — Annual Meeting, June 20-22, 1957, Hotel Hayes, Jackson, Michigan.

South Carolina Society of Professional Engineers — Annual Meeting, June 29, 1957, Francis Marion Hotel, Charleston, South Carolina.

North Carolina Society of Professional Engineers—Summer Meeting, June 27-29, 1957, Sedgefield Inn, Sedgeville, North Carolina.

Pres. Rhinehart Attends Meetings

During the past month, NSPE President Robert J. Rhinehart attended several meetings of affiliate societies as well as other organizations.

Pres. Rhinehart attended the annual meetings of the Maryland, New York, Pennsylvania, and District of Columbia state societies plus the annual meeting of the Dominion Council of Professional Engineers in Nova Scotia and the centennial convention of The American Institute of Architects in Washington, D. C.

Oregon Designer Violates Engineers' Registration Law

In a decision rendered April 22, 1957, Norman R. Hoffman, industrial designer of Portland, Oregon, was found guilty of violation of the Engineers' Registration Law and fined $50, the payment of which was suspended.

The defendant was prosecuted by the Multnomah County District Attorney on information furnished by the Board of Engineering Examiners in connection with electrical and mechanical designs and plans prepared by Mr. Hoffman for alterations for the Downtown Bohemian Restaurant. Mr. Hoffman, not being registered either as an engineer or architect, was charged with illegal practice of engineering. The defendant's attorney argued at the trial that the Engineers' Registration Law was unconstitutional on grounds of vagueness and ambiguousness. The Court rejected the defense in the decision, which is quoted in full as follows:

"The court has carefully considered the testimony and argument submitted by respective counsel during the trial of the above named defendant for failure to obtain a certificate of registration from the Board of Engineering Examiners, including the District Attorney's brief, and is of the opinion that the State has satisfied the court beyond a reasonable doubt that the defendant is guilty as charged, not withstanding the defendant's contention that the statute is vague and ambiguous.

"Accordingly, a judgment of guilty has been entered against the defendant with sentence of a $50. fine which the court, under the circumstances, has suspended."

Recent Developments in Federal Wage-Hour Act

Three recent developments pertaining to the unsettled question of coverage of professional consulting engineers under the Federal Wage-Hour Act have occurred in the past few months. They are: (1) interest expressed by Senator Wayne Morse in NSPE's proposal to amend the law to clarify the fact that it does not apply to professional consulting services, (2) a compromise bill introduced by Senator John Kennedy which would, among other changes, amend the Act by making it applicable to the performance of "services" as well as the production of goods, and (3) an appeal by the Labor Department of the recent court decision in the *Lublin, McGaughy* case holding that consulting engineers were not covered by the Act.

The National Society of Professional Engineers in March, 1957, recommended to a Senate Labor Subcommittee, conducting hearings on proposed amendments to the Wage-Hour Act, that the Act should be amended to expressly exclude from coverage those firms which render professional services. In the testimony (reprinted in full in the AMERICAN ENGINEER, April, 1957) the NSPE spokesman pointed out that the present status of the law, in regard to coverage of consulting firms, was in a considerable state of confusion as the result of conflicting Federal court decisions since 1943, and that therefore the most workable solution to this problem would be through congressional amendments.

Senator Wayne Morse of Oregon, presiding at the session of the hearing at which NSPE testified, expressed a deep interest in the position taken by NSPE, and declared that "I certainly think, in view of this prodigious history that you have just related, it is not at all an unreasonable request on the part of your association that you ask Congress to decide in the matter of policy one way or the other in this legislation. That is why I am glad you are raising it before this Committee." Continuing, Senator Morse stated: "I am never one of those legislators that take the position that when you have, let us say at best, a shadowy ground, legal principle, as you do in this case, that the Congress can justifiably say, well, let the parties go to the courts, because it is the congressional legislation that puts them in this position in the first place and when you have this kind of a history I think we should clarify it." And in conclusion, "I think your statement is perfectly clear. It raises a point that I think the Committee should answer one way or the other."

These hearings were held to consider Wage-Hour bills containing varied proposals ranging from the Administration's recomemndation to extend coverage to the employees of firms doing over $1 million in interstate business or employing one hundred or more employees, to that of Senator Morse which would extend coverage to employees engaged in any process or occupation necessary to the production of goods for commerce or to the employees of any employer who is engaged in any activity affecting commerce.

On the basis of these hearings, Senator John Kennedy, Subcommittee chairman, introduced a bill which, according to the Senator, "goes beyond the inadequate proposals of the administration" and which would amend the Act by making it applicable to industries engaged in commerce or, of special significance to the engineering profession, in the production of goods "or services" for commerce. In a statement accompanying the introduction of his bill, Senator Kennedy declared, "I believe that the bill which I am introducing represents reasonable legislation upon which both the Subcommittee and the full Committee can act favorably and quickly." At this point, the full Senate Labor Committee has discussed this bill in executive session only, after it was reported by the Subcommittee without comment.

A House Labor Standards Subcommittee is also presently holding hearings on similar proposals to amend the Wage-Hour Act which have been introduced into the House. NSPE has been granted permission to testify before the House Subcommittee also, but as yet a definite date for an NSPE appearance has not been scheduled.

Meanwhile, it has recently been learned that the Labor Department has appealed the decision in the *Lublin, McGaughy* case, which was decided this past January in a Federal District Court in Norfolk, Va. The *Lublin* case held that the Wage-Hour Act was inapplicable to consulting engineering services, because firms which render such services are neither

(*Continued on page 35*)

NEW Processes . . .

Bonding Method Devised By Seiberling Rubber Co.

Seiberling Rubber Company has developed a new process for bonding "Mylar" polyester film to a variety of other rigid and flexible materials, including steel and aluminum.

The company bonds the film with embossed surfaces. It is the only manufacturer to emboss the film in large patterns with deep grooves and ridges, according to H. M. Zimmerman, general manager of the plastics division.

"Mylar" is a tough, clear film developed by the E. I. du Pont Company. It can be used in the bonded form as decorative wall, table and counter surfacing.

As a result of the Seiberling development, coverings for radio cabinets, air conditioners, refrigerators and other household appliances can be made of "Mylar," Zimmerman said.

Sheet metal covered with "Mylar" by the Seiberling process can be shaped with its surfacing already applied, he added. This would eliminate the costly rehandling necessary to apply the finish after the metal is shaped.

Thus, auto parts—trim for dash panels and other fixtures—could be drawn, stamped, or otherwise shaped after the surfacing is applied.

Seiberling's bonding process works this way: workers apply a special adhesive substance to the material they will cover with "Mylar." Next, they place the film over the adhesive.

Heat and pressure then are applied on a giant flat-bed press designed by the company for plastics vulcanization.

"What distinguishes the Seiberling method," said Zimmerman, "is the fact we use a thermo-setting adhesive, plus a special combination of time, heat and pressure to get the bond.

"Once this bond is cured and sets, it will not soften with reheating."

Zimmerman said this makes the Seiberling process especially suitable for objects that might be repeatedly exposed to heat.

Among materials Seiberling is bonding with "Mylar" are metals of all types, wallboard, pressed wood, flexible and rigid plastics, and paper.

Kaiser Aluminum Makes Available Corrugated Roll-On Roofing & Siding

Roll-On Roofing & Siding is applied easily and quickly by two men. It is simply rolled out and nailed down. Highly reflective to heat, it keeps farm buildings up to fifteen degrees cooler during the hot summer months, aiding the productivity of poultry and livestock and providing cooler storage areas for crops and supplies.

"Just roll it on and nail it down."

That sums up installation procedures for Roll-On Roofing & Siding, the new corrugated aluminum building material now available nationally from Kaiser Aluminum & Chemical Sales, Inc.

Made of attractively embossed corrugated aluminum in a standard .019-inch thickness, Roll-On Roofing comes in easy-to-handle rolls. Each roll contains fifty lineal feet, yet it is so compact and light that one man can carry it.

In addition to its uses as a roofing and siding material, it has countless applications around the farm and home, such as decorative fencing, fluted concrete forms, light reflectors, wainscoting, house trailer skirting, animal pens, and sun shades. It is especially adaptable to car-port and patio roofs.

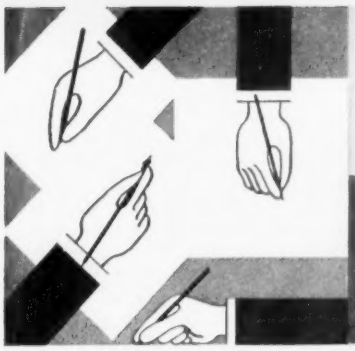
Roll-On is applied to the roof or sidewall simply by rolling it out, lining it up, and nailing. Side laps are virtually eliminated with this new material, thereby assuring better protection against wind and weather.

Two men can cover a roof quickly and easily with Roll-On Roofing, which is available in three widths—13, 30 and 54 inches. Regular metal shears are used to cut across corrugations, while special lengths—if they're needed—can be obtained by scoring corrugations with a roofer's knife and then bending at the score mark.

It's highly reflective to heat, keeping buildings up to fifteen degrees cooler during the hot summer months. This temperature-reducing factor aids the productivity of poultry and livestock, and also provides cool storage areas for crops and supplies.

Since aluminum never rusts or needs painting, Roll-On Roofing eliminates costly maintenance. It's also durable, providing long-term dependable service.

Roll-On Roofing was thoroughly tested by Kaiser Aluminum dealers in the three-state area of Alabama, Georgia and Florida. It was so well received, Kaiser Aluminum decided to market it throughout the nation. It is now available in cartons from hardware, lumber or farm supply dealers.



Professional POSTSCRIPTS

What Is a Graduate Worth? That question is an interesting one, indeed, especially to the graduate! For a greater insight into youth and careers during this prosperous June of 1957, here is a thoughtful editorial from the *Tulsa Tribune* sent to us by one of our "far-flung correspondents." Maybe you'd like to pass it along to that new grad you know who should be brought down to earth a bit.

—PP—

There has never been such a wonderful time to be graduated from college. For months representatives of the nation's great corporations have been haunting the college corridors, dangling lush offers before the senior students. This year, according to the Kiplinger Magazine, the lures are breaking all records.

Some types of engineering students are being offered $430 a month to start. Accountants will average $330, with salesmen and general business trainees close behind. A master's degree will bump a neophyte engineer's pay up another $100 and a Ph.D. another $150 over that.

All this is wonderful. Gentlemen in caps and gowns will step down from the platform into positions of affluence, buttressed in some cases by bonus, pension and stock-option schemes, that their fathers couldn't achieve after 30 years of work.

Still, it might help their sense of values a bit if the reason for some of this frenetic bidding were explained. The average young engineer, for example, is not going to really be worth $100 a week to any employer for quite some time. Why, then, such offers?

Our tax system puts a premium on bigness—bigness at almost any cost. Owners of good small companies are finding it more profitable to sell out to good big companies and to take a capital gain, then to pay income taxes in the higher surtax brackets.

The big companies are pressing to keep ahead of other growing companies in their fields. Growth calls for recruiting a backlog of scientists, engineers and researchers who, happily, can be paid temporarily more than they may be worth. For such corporations are in the 52 per cent tax bracket and growth, in this feverish era of competition, is sometimes more important than what used to be considered sound business practice.

This does not mean that the college graduate of '57 will not eventually be pulling his own weight. Obviously, he wouldn't be hired if the company bosses thought he would always be worth less than his paycheck. But it does mean that in this race to catch and hold graduates the starting salary isn't always the measure of actual value.

The father of today's graduate, who got into the labor market about the time the country was sliding into the Depression, faced a ruggeder world. In those days Ph.Ds held down ribbon counters and Masters of Science were lucky to work at lathes. A large percentage of the Classes of '32 and '33 went for more than a year without any work at all.

This, of course, was a great tragedy. But it had some compensations. The college graduate in those gloomy times labored under no delusion that the world couldn't get along without him. He was less concerned with what the company would do for him than with his ability to make the grade with the company. He started small and painfully, but as things gradually opened up each raise was a joyous achievement. The road behind became something to look back on with satisfaction. Horatio Alger still lived and "Work-and-Win" and "Onward-and-Upward" were valid slogans for that modest progress that was then called "success."

The young graduate of today is born almost in the sports car class. The boss greets him at the door and the chairman of the board asks if his seat is comfy. This is all wonderful, indeed. But it's hard to learn to be a good plowman if you live in a Garden of Eden where the fruit drops from the sky.

—PP—

The next paper we pass along for your approval is one entitled "Registration of the Junior Engineer" by Howard M. McMaster, P. E., one of our good readers from Omaha, Neb. Here, then, are Engineer McMaster's thoughts on helping the young engineer become well grounded in his work.

—PP—

Periodically among engineers the question has arisen as to what preparation, if any, should the young engineer receive in order to become professionally registered by a state examination. This problem has been discussed among not only individual engineers but also among the various technical and professional societies in engineering.

In order to more completely evaluate this problem, let's examine some of the factors involved. First, the examination itself. During each registration period, each state has an examination prepared which they feel will illustrate the professional competence of the examinee. At the present time, most states offer examinations directed at some of the various subdivisions of engineering: i.e., civil engineering, structural engineering, electrical engineering, etc. Presumably each individual is being examined in the area in which he pro-

JUNE MEETINGS OF NOTE

Society of Automotive Engineers—Summer Meeting, June 2-7, Chalfonte-Haddon Hall, Atlantic City, N. J.

American Society of Civil Engineers—National Convention, June 3-7, Statler Hotel, Buffalo, N. Y.

American Society of Mechanical Engineers—Semi-Annual Meeting, June 9-13, Sheraton-Palace Hotel, San Francisco, Calif.

American Rocket Society — Semi-Annual Meeting, June 9-13, Hotel St. Francis, San Francisco, Calif.

The Patent, Trade-Mark, and Copyright Foundation of The George Washington University — Public Conference, June 13-14, Shoreham Hotel, Washington, D. C.

American Society for Testing Materials—June 16-21, Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.

American Society for Engineering Education—Annual Meeting, June 17-21, Cornell University, Ithaca, N. Y.

American Society of Heating and Air-Conditioning Engineers — Semi-Annual Meeting, June 24-26, Manoir Richelieu, Murray Bay, P.Q., Canada.

claims professional competence. The administration of these examinations imposes a tremendous problem for registration boards. The problem exists because there is insufficient time during the examination to provide a really comprehensive material coverage. Usually the problems are formulated by individuals in specialized fields and many times competence is evaluated within very narrow limitations. To overcome some of these difficulties, state registration boards provide alternate questions from which the examinee may select those questions which he feels more competent to answer. Also, evaluation of examination results includes some recognition and correlation of answers with the examiner's specific engineering experience.

However, many times this situation results in an unintentional and unhappy circumstance where a young engineer is literally examined for professional competence outside his primary field of experience. It is obvious that as a practical thing, it is not possible to provide the ideal examination for all. This, then, of necessity leaves a gap between examination and actual professional experience. It is this gap which we must consider to properly evaluate the need for examination preparation.

Discussion with individuals and various engineering societies indicate that in the past this gap has been bridged by a variety of study ranging all the way from individual study to an organized school utilizing various old examination questions as a primary teaching aid.

Review of the purpose of registration examinations, correlated with the precepts of professionalism, clearly shows that any program which literally crams temporary information into a young engineer for the sole purpose of passing a registration examination does a great disservice to the profession as a whole and to the individual himself.

Although we all agree to these basic principles, we are nonetheless faced with the responsibility as registered engineers to see that the gap which exists is closed by a means which is consistent with the ideology of our profession.

Consideration of all factors involved leads to the conclusion that there must be a dissemination of basic information from the mature, registered engineer to the junior engineer. This can be accomplished by means of informal study periods which could be conducted in conjunction with regular meetings of any engineering society. At these times basic related subject coverage could be provided by engineers working each of specific, related fields. As an example, a foundation engineer must sooner or later be capable of designing a reinforced concrete footing. This requires more than a casual knowledge of reinforced concrete. Yet, this information and sufficent proficiency for foundation engineering could easily be provided by an engineer whose principal experience is in reinforced concrete. It thus becomes apparent that such a training program would allow our young engineers to pass any examination, but even more important, would prepare them to do a really competent, professional job in the engineering profession.

Professional recognition requires that each of us accept this responsibility.

—PP—

This seems the month for newspaper clippings and we are pleased to pass one along to you from a New York newspaper. It tells all about how an engineer helped in breaking up a crime and it just goes to show again how important P. E.'s can be. O. K., Jack Webb, take it away.

—PP—

An 18-year-old youth accused of firing rifle shots across the Harlem River into Manhattan—once narrowly missing a person—was arraigned in Bronx Magistrate's Court yesterday. His arrest had been brought about by the deductions of a civilian employed by the Police Department.

Christian Jensen, an automobile mechanic who lives at 2626 Bailey Avenue, the Bronx, was arrested on Tuesday night. When asked why he had fired the shots he answered, "I just had the urge."

The police had started to investigate the case on Nov. 19 when the superintendent of a five-story apartment building at 70 Park Terrace East reported that a shot had broken a window in an unoccupied apartment.

The bullet was so deeply imbedded in the wall that a detective thought it had been fired from nearby. The investigation brought no results.

Last Sunday the same detective was again alerted when a report came from the River Oil Company at 219th Street and Ninth Avenue that two shots had been fired.

One bullet had entered the office of Louis Nanni, a dispatcher who lives at 1786 Seventy-fourth Street, Brooklyn. Mr. Nanni told the police that the bullet had missed him by inches.

Then Hyman Baron, the engineer, was called in.

Mr. Baron went to the scene of the earlier incident and studied the wall. He was certain that the shot had been fired from the Bronx side of the river, a distance of about three-quarters of a mile.

He lined up the point the bullet had entered the wall with the point where it had penetrated the window. Then he sighted along the imaginary line with a surveyors' transom.

He directed Detective Joseph Brady to the bedroom window of the two-story building where Jensen lives.

The police found a Japanese rifle that a ballistics test proved to be equivalent to an American-made, 30-caliber rifle.

Magistrate Vernon Riddick, before whom the prisoner appeared, held him in $1,500 bail for a hearing next Thursday. Jensen was arraigned on charges of violating the Sullivan Law and discharging a rifle in such a manner as to endanger life, a misdemeanor.

—PP—

Our final —PP— for this month is a reprint of a paper given by Engineer O. B. Curtis, Sr., before the American Water Works Association. The author, from NSPE's Mississippi SPE, entitles his paper, "The Engineer's Responsibility to His Client." Here is Engineer Curtis.

—PP—

An engineer's responsibility to his client amounts to a summary of engineers' codes of ethics—less, perhaps, portions which deal with behavior *between* engineers, plus certain good business practices applicable to any business. There is nearly complete congruence between an engineer's responsibility to a client, and his responsibility to himself. This discussion will be in terms of an engineer with an average job in a modest organization rather than in terms of the larger organizations and their "superjobs."

It is appropriate to consider those responsibilities which are frequently abridged or left unfulfilled, or those which are of such importance that they cannot be neglected. An engineer's first responsibility begins immediately. He should accept only that assignment on which he is quite certain he can deliver an economical, sound, modern, job. He should accept only that assignment for which he is qualified by experience or training to deliver a comprehensive analysis of all parts, including a reasonably accurate preliminary estimate of cost.

engaged in interstate commerce, nor where a report or study is involved.

An engineer may find it expedient to employ one or more consultants or specialists to perfect certain phases of the work. Such perfecting usually consists of the design or inclusion of up-to-date machines, processes or materials, the detailing of special or complicated parts, the writing of specifications to conform with unfamiliar codes, or the designing of an important unit by one who has specialized in that type of work—for example, the design of treatment plants or pumping stations in city sewage systems, the design of swimming pools or drives and parking areas which are part of a larger improvement.

A second major responsibility concerns tactfulness. If, for example, the client is politically prominent, the engineer and his employees must conduct themselves in such a manner that the client's prestige and public esteem do not suffer. This involves tactful dealings with the client's constituents as well as thorough and repeated instructions to all subordinates. Nearly all public improvement projects inflict damages on property or infringe the rights of one or more owners. It matters not whether these owners have been compensated—they usually remain aggrieved, and are ready to air their grievances to the engineer, his representatives, or even to the construction workers. The engineer's instructions to his representatives should include directions to the contractor's supervisory personnel regarding the conduct of his employees.

In the event the owner holds a nonpolitical position, equal and similar care should be exercised to see that he receives no damage either from the public or from his own clients or customers. This matter is so important to so many construction projects that it deserves continuous checking for results.

Another important responsibility of an engineer to his client lies in the area of public liability. He should exercise his professional judgment to prevent the client from making decisions which will incur liability. One broad example of such decisions would be reduction of the costs to conform with the funds available, where the modification or limitation would result in future injury or damage to property. An example of wise counsel by the engineer would be the recommendation that damaged property be protected by the contractor at the client's expense, in order to arrest or minimize the damage until restoration can be made.

Further responsibility lies in the legal field. Wording of the general requirements and covenants of specifications should be approved by competent legal talent. This includes the processes for awarding and executing contracts, those for fixing bonds, the scope of work, legal relations, contractor's responsibility to the public for conditions which control the prosecution and progress of the work, additions, deletions, and negotiations for extra work.

The field of allocation of responsibilities is also important. Frequently an inspector (whose principal qualifications include longevity) will consult with a contractor's superintendent whose qualifications also derive from experience on similar jobs, and they will agree to waive an apparently minor work procedure called for by the specifications. They will reason that it costs more than it is worth, and that they have successfully completed many good jobs without using this procedure. The item eliminated may be a work procedure approved and adopted by an organization which is national in scope, such as the AWWA or the American Road Builders Association, and, hence, a procedure which has been found, after multiple trials, to be well worth the added cost. Broad examples would be changes in methods of calking pipe joints and in the preparation of trench beds. Others involve additional base watering, denser base compaction, longer rolling, and so on.

More applicable to the larger firms and to larger jobs is the question of top-level conferences. In general, the client hesitates to call the engineer back to a succeeding conference shortly after the conclusion of a previous one, and, too often, the top-level engineers of a large firm do not make themselves easily available for needed conferences, even though they retain responsibility for final decisions.

Although a separate fee is appropriate for cases of litigation, too many engineers do not make themselves available or fail to provide the many facts usually required in a lawsuit.

Another responsibility lies in the field of job records. An accurate record of the progress of a job is a "must." This includes date of starting, dates of moving and removing units of equipment, contractor's forces employed each day, type of work in progress, its location, and the nature of engineering services, plus notes on weather conditions, official visitors, delays, potential delays, and similar matters. In disputes, lawsuits, and other difficulties, the job record assumes an importance far above its usual one.

It is the engineer's responsibility, too, to see that neither he nor any employee is interested financially in any company, corporation, or enterprise within his jurisdiction on the project involved, and that none of his employees receives gratuities, employment, or compensation of any description in exchange for directed purchases, biased decisions, or alteration of the plans or specifications. It is appropriate for a contractor or a manufacturer to reward an engineer or his subordinates for developing a new use for a product, a new procedure for machine, or even new techniques in methods. Such rewards, however, should be made with the full knowledge and consent of the client.

Wage Hour

(*Continued from page* 31)

engaged in the production of goods for interstate commerce. (See story in AMERICAN ENGINEER, March, 1957). This decision is in agreement with a 1948 Federal Court decision in Baltimore, (*McComb v. Turpin*) but is contrary to a case decided by the 8th Circuit Court of Appeals in 1955 (*Mitchell v. Brown*). Should the *Lublin* case be affirmed on appeal, there would be contrary Appeals Court decisions on the issue of coverage of consulting engineers. This conflict between Circuit Courts could possibly form the basis of a Supreme Court decision, which would, by judicial means, finally settle this long-standing problem of coverage.

An interesting sidelight to these developments is the decision of a Federal District Court in California on May 16, 1957, on the question of the applicability of the Wage-Hour Act to an investigative agency. An investigative agency, like consulting engineers, lawyers and others, is also engaged in the rendition of a specialized service for its clients. In this California case, the Court, holding that the agency was not covered by the Act, declared that the investigative reports could not be brought within the definition of "goods" produced for commerce, which is a basis for coverage. "They are specifically compiled and prepared to meet the particular problem of a specific client and are not sold or offered for sale to the public generally," the Court said, citing the *Turpin* case in support of the principle involved. The Court further stated that the mailing of the reports between different agency offices does not amount to the employees of the agency being engaged in commerce within the contemplation of the Act.

With Our Members . . .

250 Exhibits Entered

Virginia Chapter Presents Awards To Students at Roanoke Science Fair

—Roanoke Times Photo

Prominent in the Science fair were, l. to r.: Sam R. Wade, chapter president; John Garland Williams, Senior Division winner; W. M. B. Williams, chairman of the chapter's Education Committee, and Douglas Drumheller, Junior Division winner.

The Roanoke Chapter of the Virginia SPE recently presented awards to the Senior and Junior Divisions, Physical Sciences, at the Roanoke City Science Fair. Presentations were made by S. R. Wade, chapter president, and W. M. B. Williams, chapter chairman of the Education Committee. A committee of ten from the Chapter judged the exhibits.

John Garland Williams, senior, Jefferson High School, was the winner of the Senior Division and received a K&E Log Log Decetrig Duplex slide rule for his original and ingenious "Electronic Recording System," which consisted of a power supply, amplifier and sweep circuits, with cathode-ray tube, photo-multiplier tube, lens and film mounted in a light-tight box. The device was used for intensifying very weak photographic negatives. The process was explained by a continuous tape recording of two minutes, twenty-five seconds, prepared by the student, started by a pushbutton, and stopped automatically at the end. Samples of intensified films were exhibited to show the practicability and quality of the device.

Douglas Drumheller, ninth grade student of William Fleming High School, was the winner in the Junior Division and received a set of K&E drawing instruments. His exhibit, "Pete, the Repeating Flash," consisted of a bread-board layout of an electronic photo-flash unit which he designed and constructed, later to be rebuilt into an aluminum box about 4" x 6" x 8". The design, physical principles and formulae involved were neatly displayed on a large poster behind the unit. The unit could be flashed by the camera, a separate switch or a "slave" phototube sensitive to another flash of light.

The Roanoke Chapter was highly pleased by the 250 exhibits entered and hopes to increase the number and value of VSPE awards next year, and to include also the Roanoke County Science Fair, and the District Science Fair.

Clair O. Dean New Head Of Erie County Chapter

Clair O. Dean is the newly-elected president of the Erie County Chapter of the New York State SPE.

Other 1957-58 officers elected include: B. Roy Ertell, first vice president; James N. DeSerio, second vice president; Joseph A. Glajch, recording secretary; Richard C. Wohler, treasurer, and E. J. Greenan, Jr., and Cameron Ross, directors.

F. J. Johnson Elected New York State SPE Pres.

Franklin J. Johnson has been elected president of the New York State SPE, it was announced at the closing session of the Society's recent annual meeting.

Mr. Johnson, of Rockville Centre, L.I., is associated with the Consolidated Edison System. He is a past president of the Queens Chapter of

Mr. Johnson

the NYSSPE, and has served as president of the State Society for the past two years.

Leigh St. John, of Binghampton, N. Y., has been elected first vice president of the Society. He is a member of the firm of St. John, Platt and Carlson, Consulting Engineers, a former member of the Board of Examiners of Professional Engineers of the State of New York, and a national director of NSPE.

Anatole R. Gruehr, of Ridgewood, N. J., has been elected second vice president. Dr. Gruehr is professor of Economics and head of the Department of Economics and History at Polytechnic Institute of Brooklyn. He is a Fellow of the American Institute of Electrical Engineers, and a national director of NSPE.

Richard B. Richardson has been re-elected financial secretary, and Patrick M. Corry re-elected treasurer. Mr. Corry has served continuously as treasurer since 1928.

Victor E. Hall, Alfred Hendrich, and H. Dale Bossert were elected directors of the Society.

Ohio and West Virginia Chapters Hold Meeting

A joint meeting of two Ohio Society chapters and two West Virginia chapters was so successful recently the event may now be repeated annually. The idea for the meeting was conceived by Robert Heyl, Wheeling, W. Va., chapter president, and Martin Pohjola, Wierton, W. Va., chapter president. The two Ohio chapters asked to participate were East Ohio and Jefferson County.

Harry G. Kennedy, of Charleston, W. Va., NSPE regional vice president, was the principal speaker. More than 100 members and guests attended to meet officers and officials from both societies.

Thomas Grove, president of the East Ohio Chapter, served as chairman for the affair. (See photos below.)

New Jersey Society Holds Annual Meeting

One of the highlights of the recent annual meeting of the New Jersey SPE was the Society's presentation of the Citizen-of-the-Year Award to U. S. Senator Clifford P. Case, (R-N.J.). About 700 attended the affair, including exhibitors, wives, and guests.

Roscoe P. McClave, Bergen County engineer for more than thirty years, was the recipient of the Society's annaul engineering award "for outstanding achievement in professional engineering."

Addressing the opening luncheon of the 33rd annual meeting was General James A. Van Fleet, retired, former commander of United Nations ground forces in Korea, who said that he felt "Russia will never go to war."

Ohio, West Va., Meet Jointly

Shown above are officers who attended a recent joint meeting of the Eastern Ohio and Jefferson County chapters of the Ohio SPE and the Weirton and Wheeling chapters of West Virginia SPE. Seated, l. to r.: Max Gorsuch, president, Jefferson County chapter, Ohio SPE; Harry G. Kennedy, main speaker, regional vice president, NSPE; I. A. Pitsenberger, president, West Virginia SPE. Standing, l. to r.: Lloyd Chacey, executive secretary, Ohio SPE; Thomas A. Grove, president, East Ohio Chapter; Robert A. Heyl, president, Wheeling Chapter; Martin H. Pohjola, president, Weirton Chapter; Ross B. Johnston, executive secretary, West Virginia SPE; John R. Martin, Jr., second vice president; West Virginia SPE; and William D. Nickles, first vice president, West Virginia SPE. Below is some of the crowd of more than 100 who attended.

By Mrs. Warner Howe, Chairman of the Ladies Auxiliaries Advisory Committee.

IT SEEMS TO ME THAT THE ideal program for an auxiliary would be a talk by the industrial engineer Lillian M. Gilbreth, the mother of the dozen in *Cheaper By the Dozen*, who with her husband made the first time and motion studies and through application of efficiency principles reared her dozen and also achieved fame as the leading woman industrial engineer. A talk by such an "efficiency expert" might help us acquire skill in time-saving practices so that we could achieve the fine things we plan to do as engineers' wives.

ONE BUSY AUXILIARY IS THE newly-formed (March) Auxiliary to the Augusta Chapter of the Georgia SPE. The president, Mrs. John T. Cleckley, reports that the group is making plans for women's activities at the Georgia SPE convention to be held at Augusta in June.

THE LAKE ST. CLAIR Auxiliary of the Michigan SPE, also organized in March, was presented their charter by officers of their parent chapter on April 15. The president of this Auxiliary is Mrs. Francis M. Tousley, Grosse Pointe Farms, Mich.

IT IS A PLEASURE TO announce the formation of an auxiliary in Charleston, S. C., on April 24. In May at a joint dinner party with the Charleston Chapter, SCSPE, Mrs. Earl Wolcott was installed as president, and Mrs. Louis M. Andrews installed as secretary. William Schachte, president of the men's group, was the main speaker at this affair. Those who attended the NSPE spring meeting in Charleston were impressed with the enthusiasm and hospitality of the hosts and the fact that

(Continued on page 39)

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Restricted to Registered Professional Engineers . . . *Directory Continued on Next Page*

Auxiliaries

(*Continued from page 37*)

they planned the meeting so that the ladies' luncheon was free to guests and part of the banquet price absorbed. The men and women of the Charleston group sought to make visitors feel personally welcomed and created that friendly atmosphere which helps make a meeting successful.

MRS. HUGH GETT, WRITES that the Auxiliary to the Little Rock Chapter, Arkansas SPE, has established a memorial fund in honor of Kenneth Lefever, who was loved and respected by engineers and their families throughout the South. Memorial contributions will be put into the Auxiliary's scholarship fund which is established for an outstanding engineering student at the Arkansas State University.

IN ADDITION TO REPORTS OF newly-formed auxiliaries, the mail contains news of the 20th anniversary of the Central Oklahoma Auxiliary, OSPE, whose president is Mrs. Melvin A. Witte. Twenty-three charter members were honored at the Founder's Day Tea held April 18 at the home of Mrs. David B. Benham at Oklahoma City.

Comparing Notes

President Oscar Beasley, left, of the District of Columbia Society compares notes over the plan of Congressman DeWitt S. Hyde of Maryland to have a special study made by Congress of the Metropolitan Washington area's overall planning and development. The Congressman revealed his plan at a meeting of the D. C. Society. (See story on right.)

Congressman DeWitt Hyde Reveals Plan to D. C. SPE For Special Study

District of Columbia SPE members recently heard a Congressman call for a special study by Congress aimed at making a master plan for the development of the Metropolitan Washington, D. C., area, including nearby Maryland and Virginia.

Congressman DeWitt S. Hyde made the suggestion as he spoke recently before the D. C. Society.

If put into effect, the Maryland Congressman said, the plan could serve as a guide for the future growth of communities throughout the nation.

Representative Hyde's plan calls for a thorough study of water supply problems, transportation facilities, public utilities and streets, road and highways.

He urged support of the plan which he revealed at this meeting of the District of Columbia Society, which also includes registered engineers from nearby Maryland and Virginia suburbs.

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Restricted to Registered Professional Engineers . . . Directory Continued on Next Page

Wichita Society Elects "Jack" Hook President

Darwin "Jack" Hook has recently been elected to head the Wichita Society of Professional Engineers for the ensuing year.

Serving with President Hook will

Mr. Hook

be Vern Winkel, vice president; Jim McNicol, secretary, and Rex Brunson, treasurer.

Highlighting society activities during the past year was the launching of an extensive education program in cooperation with the Wichita Board of Education and high school mathematics and science teachers. The purpose of the program is to organize engineering clubs within the high schools and interest students in engineering as a profession.

Another major achievement of the year was the publishing of a monthly magazine, the *Wichita Professional Engineer*, which now has a circulation of 1,000 copies per month.

"Engineer of the Year" Award Given Chappell

Frank W. Chappell, Sr., recently received the "Engineer of the Year" award from the Dallas Chapter of the Texas SPE. The prominent engineer is best known for his work in the building of the Cotton Bowl.

Presentation of the award was made by H. G. Gregerson, president of the Dallas Chapter at a dinner affair attended by approximately 400 people. Mr. Chappell, who is serving as general chairman of NSPE's forthcoming annual meeting committee, was introduced by T. Carr Forrest, Jr.

Mason G. Lockwood, president of the American Society of Civil Engineers and an NSPE member, was principal speaker for the affair.

Potomac Chapter Elects V. J. Richter President

The Potomac Chapter of the Maryland SPE has elected the following officers to serve during the coming year: V. J. Richter, president; Page F. Hopkins, first vice president; Max Morris, second vice president; John H. Marburger, Jr., secretary; Alden Imus, treasurer; Douglas S. Brinkley, director to Maryland State Society; and L. W. Cadwallder, Edward Scullen, and Russell B. Allen, Directors.

Col. H. F. Sykes, Jr., director, U. S. Army Engineer, Research and Development Laboratories, Ft. Belvoir, Virginia, was the guest speaker at the April dinner meeting of the Chapter which forty members and guests attended. The subject of the talk was "Uninhibiting the Engineer." Col. Sykes prodded the traditional conservatism of the civil engineer and discussed brainstorming, management attitude, and imaginative and alert thinking.

Dr. Buchanan, president of the Asphalt Institute, was the guest speaker at the May dinner meeting.

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. . . Supplemental Services . . .

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Personalities . . . **Clarence H. LaVee** has been appointed director of engineering, research, and development for **Hubbard and Company,** and will direct a new and expanded research program for all **Hubbard** plants. . . . **Dr. Royal Weller** has joined **Stromberg-Carlson,** a division of **General Dynamics Corporation,** as vice president in charge of engineering, according to an announcement by **Robert C. Tait, Stromberg-Carlson president.** . . . **The Daven Company,** Livingston, N. J., has announced the appointment of **Frederick A. Schaner** as chief engineer. . . . **Aubrey H. DeSantos** has joined **Jack Ammann Photogrammetric Engineers, Inc.,** as manager of their branch plant in Atlanta, Ga. . . . **I. E. Boberg,** chief engineer of the **Chicago Bridge & Iron Company,** Chicago, Ill., has been elected a vice president of the firm. . . . **Hycon Aerial Surveys, Inc.,** announces two appointments—**Harvey F. Ludwig** has been named manager of sales and contracts and **Joseph L. Feeney** as chief sales engineer. . . . **James E. Dallas** has been appointed development engineer for the Plywood Research Foundation affiliated with the Douglas Fir Plywood Association, Tacoma, Wash. DFPA also has announced the appointments of four men to newly-created positions on the staff of their Engineering-Research Laboratory. They are: **DeForest Matteson, Daniel H. Brown, Joseph L. Leitzinger,** and **Walter Boyden.**

Mr. LaVee

Loris L. Gerber, vice president of **The Prescon Corporation,** has been transferred to Denver, Colo., as manager of **Prescon's Rocky Mountain Division. Ben. W. Young** has assumed **Mr. Gerber's** duties as chief engineer at the company's main office in Corpus Christi, Tex. . . . **Vernon I. Weihe** has joined the **Avionic Division** of **General Precision Laboratory Incorporated** according to an announcement by **William J. Tull,** vice president of the Pleasantville, N. Y., concern, a subsidiary of **General Precision Equipment Corporation.** . . . **Harry J. Graham** has been named director of engineering for **Clinton Machine Company,** Clinton, Mich., and Maquoketa, Ia. . . . The appointment of **Gerald R. Sauer** as project "SAGE" engineer for the **Radio Corporation of America** at Topsham, Me., has been announced. . . . **Underwriter's Laboratories, Inc.,** has elected **G. E. Manning** as a vice president and chief engineer and **K. S. Geiges** as a vice president. . . . **Charles F. Biggs** has been named chief plant engineer for **Seiberling Rubber Company,** Akron, Ohio, it has been announced by **E. P. Schrank,** manager of engineering.

Mr. Weihe

Woodman Perine, director of **Vitro's** Silver Spring, Md., Laboratory, has been elected to the new office of president of **Vitro Engineering Company,** a division of **Vitro Corporation of America,** according to an announcement by **J. Carlton Ward, Jr., Vitro** president. . . . **Douglas Dickinson** has been appointed regional sales manager in the Chicago, Ill., district office of **Heli-Coil Corporation,** Danbury, Conn. . . . **Lear, Inc.,** has announced the appointment of **Clare E. Barkalow** as associate manager of the Advanced Engineering Division. . . . The appointment of **G. James Alaback** to the position of director of engineering for the St. Joseph, Mich., division of **Whirlpool Corporation** has been announced. . . . **Leslie F. Zsuffa** has been appointed as chief engineering adviser for the Southeastern regional office of the **Small Business Administration** in Atlanta, Ga. . . . **Baboo Ram Teree** has been elected vice president in charge of engineering and manufacturing of **Greer Hydraulics, Inc.,** Jamaica, N. Y. . . . **Nils H. Lou** has joined **Reynolds Metals Company** as manager of manufacturing for the company's Parts Division in Louisville, Ky. . . . The appointment of **James R. Kerr as** president of **Lycoming Division, Avco Manufacturing Corporation,** has been announced by **Raymond A. Rich, Avco** president. . . . **Lloyd D. Armstrong** has been appointed technical assistant to the manager of personnel, Housing Administration, at **International Business Machines Corporation's** Owego, N. Y., location. . . . **John P. Rossie** has joined the firm of **R. W. Beck and Associates** as principal design engineer in their Columbus, Neb., office.

Mr. Dickinson

New Firms . . . **Gilbert H. Mandeville** has announced the establishment of an engineering and architectural firm with offices in Seattle, Wash. The new company will be known as **Gilbert H. Mandeville, Consulting Engineers.** . . . **Hugh C. Carter** has announced the formation of a consulting engineering firm to be known as the **Hugh Carter Engineering Company,** Long Beach, Calif.

Operational Expansion . . . A new $1¼ million technical engineering center providing the very latest and most modern working conditions for **The Trane Company's** product engineering and design departments—has recently been completed in La Crosse, Wis. . . . **The Timken Roller Bearing Company** started construction in May on a new engineering building in Canton, Ohio, with an expected cost of over one million dollars. . . . The recent opening of **Weldaloy Products Company's** new facilities in Burbank, Calif., has been announced by **J. A. O'Grady,** president. The plant will serve as headquarters for the newly-created **Weldaloy Western Division.**

...NEW LITERATURE...

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LIGHTING—Hub Electric Co., 2255 West Grand Ave., Chicago 12, Ill., a pioneer in the fields of special lighting and control equipment, announces the recent publication of a unique piece of technical literature—its Bulletin SL-56, "Engineered Lighting and Control Equipment for the Modern School Stage." This is not a catalog, but a comprehensive presentation of an over-all coordinated design procedure as applied to a highly specialized problem with many unusual but interesting facets. The bulletin has in large part been prepared by Theodore Fuchs, of Northwestern University, a consulting engineer and outstanding authority on auditorium design and stage lighting, and a consultant to Hub Electric Co.

—AE—

BEARINGS — Non-lubricated bearings made from carbon graphite material is the subject of a new 16-page catalog. These bearings operate under very high temperatures, are chemically inert and have overcome many maintenance problems for industry. Carbon graphite bearings in operation are illustrated in ovens, process equipment, conveyors, etc. Also, included are nomograph charts, grades and design information. Write: Electro-Nite Carbon Co., 8601 Torresdale Ave., Philadelphia 36, Pa.

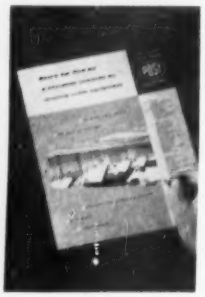
—AE—

TUBULAR EQUIPMENT—Engineers associated with the design or operation of tubular equipment used in severe corrosive environments will be interested in a technical data folder recently published by the Tubular Products Division of The Babcock & Wilcox Co. The folder discusses the seamless titanium metal pipe and tubing produced by the Division. Today's active interest in the availability of titanium in tubular form is a logical outgrowth of the current industrial development of this useful new metal for a variety of applications. The folder presents in detail the size range and tolerances as well as a complete description of the mechanical, physical and working properties of the metal in tubular form. Copies of the 12-page folder, known as TDC-185, are available free on request at the Division's general sales offices at Beaver Falls, Pa.

—AE—

PRECISION GEARS — An illustrated brochure entitled "Precision Fine Pitch Gears" has been published by Fairchild Camera and Instrument Corp. The brochure discusses precision gears as compared to commercial gears and the methods and equipment employed in producing the finest precision gears. Quality control measures required for accuracy and close tolerances are also discussed. Another section is devoted to the latest recommended gear data formats used in requesting quotations and cost estimates. Copies of this literature may be obtained by writing Precision Gear Dept., Fairchild Camera and Instrument Corp., Robbins Lane, Syosset, L. I., N. Y.

DRAFTING CHECKLIST — Stepped-up production in the plant almost always means stepped-up activity in the drafting room. Unfortunately, there is rarely time to stop and take stock of what is happening to drafting room efficiency as the work load increases. With the shortage of manpower obviously continuing, it is apparent that a careful, critical review of drafting methods and equipment can lead the way to improved operations. One way to pinpoint possible increases in productivity is



to go, item by item, through a check-up list showing every type of product used in a modern, well-equipped drafting room. For a copy of a drafting room check-up list, write Frederick Post Co., 3630 N. Avondale Ave., Chicago 18, Ill.

—AE—

PORTABLE HOISTS—A new 12-page, 2 color booklet no. 3-16A describing Joy Single Drum Multi-Purpose portable Hoists has been published by the Joy Manufacturing Co., Oliver Building, Pittsburgh 22, Pa., and is now available. The well-illustrated booklet carries descriptions and specifications for the Joy line of air, electric and gasoline driven models. Ranging in size from 0.9 to 15 H.P., the hoists have lifting capacities from 750 to 5000 lbs. at top speeds up to 125 FPM. Wire rope capacities range from 200 to 1500 feet.

—AE—

FORK TRUCK—A four-page folder, illustrating and describing its "Safe-Hite" electric powered fork truck, with 2000-lb. capacity, has been published by the Elwell-Parker Electric Co., Cleveland, Ohio. Known as Model F-48T2, the truck is specifically designed for use where low headroom is a problem, for example, during loading and unloading of street trucks, in tunnels, basements and the like. The free literature is profusely illustrated with typical truck application photos, photographs of major component parts, plus engineering drawings. Detailed specifications plus valuable operating and application information is likewise included. Copies may be obtained from the Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 3, Ohio.

BUYER'S GUIDE — New Instrument Transformer 1957 Buyer's Guide contains 90 pages of price and product information on General Electric's complete instrument transformer line. Released by the Company's Instrument Department, the Guide lists prices, ratings, ASA accuracy classifications, weights and dimensions, and catalog numbers on current and potential transformers, both indoor and outdoor type; metering outfits; portable transformers, both current and potential; and Thyrite protectors. Additional information is given on tests, mechanical and thermal limits of current transformers, previous types of transformers and their replacements. Photo-caption technique permits quick, easy reference to voltage ranges, nomenclatures, basic construction features, maximum and minimum primary voltage ratings, current ratings, ASA insulation classes, impulse levels, and cycles.

—AE—

BUS INSTALLATIONS—The most complete handbook ever published on the properties and uses of aluminum bus conductor is available from Aluminum Company of America. Entitled "Alcoa Aluminum Bus Conductor Handbook," the 280-page work presents facts and figures vital to anyone responsible for engineering and maintenance of bus installations. It contains 69 graphs, tables and photographs, presenting essential information in easy-to-read, readily usable form. There is comparatively little text. Copies of the handbook may be obtained by writing on company letterhead to Aluminum Company of America, 793 Alcoa Building, Pittsburgh 19, Pa.

—AE—

STUD WELDING—Tips for design engineers on how to take full advantage of the inherent savings possible with stud welding are among the features of a 24-page Design Manual now available from the Nelson Stud Welding Division of Gregory Industries, Inc., Lorain, Ohio. The manual contains full descriptions and physical properties of the various stud types, including the new standard "CP" stud which is recommended for the large majority of applications where a straight threaded stud is required. Manual sections of special interest for designers are those discussing stud selection, counterbore and countersink dimensions for accommodating weld fillets, recommended thicknesses of steel on which studs are welded, and stud locating procedures including template design.

—AE—

GRATINGS—An informative, illustrated bulletin on grating and treads has been published by the Blaw-Know Company of Pittsburgh. This new bulletin presents descriptions on electroforged, riveted, rectangular, diagonal, "U" type and "I" interlocked grating and treads. Tables on safe loads and information necessary to specify are also included in the catalog. For a copy, ask for Bulletin No. 2527, Grating Department, Blaw-Knox Co., P. O. Box 1198, Pittsburgh 30, Pa.

These listings are informational only and are not an endorsement of the products, nor of the manufacturer's claims.

Testimony

(*Continued from page 30*)

furnished to the Subcommittee for additional information.

A token attempt to alleviate this crucial salary situation was taken last year by the Civil Service Commission when it raised the minimum rate of pay for certain engineering, scientific or technical positions at grades GS-5, 7, 9, and 11 under the Classification Act as amended by Section 104 of Public Law 763. These increases, while admittedly a stride in the right direction, cannot correct a long-range situation. They merely provide immediate short-term increases still within the basic General Schedule, and further compress the salary range between the young engineers and those employees holding the more responsible positions who have a wealth of background and experience. Such a situation can and has led to higher resignation rates for engineering and scientific employees in positions of GS-12 or above.

In addition, varied and sundry proposals have been suggested in an effort to provide Federal pay adjustments. Some of these are as follows:

1. Give the Civil Service Commission authority to fix the starting salaries at any step within the grade, and superimpose step increases beyond the present limit.
2. Start engineering and scientific graduates at GS-7 instead of the present GS-5.
3. Increase the number of super-grades (16, 17, or 18) that pay from $12,900 to $16,000.
4. Give the Civil Service Commission broader authority to adjust upward the salaries of scientists, engineers and other short-supply, hard-to-hire personnel.
5. Amend the Classification Act to give the Commission the authority to set salaries for the scientists and engineers to meet competitive conditions.

At present, the Civil Service Commission has exhausted its legal authority. The situation continues, and in the opinion of the National Society of Professional Engineers the above-mentioned solutions will not get to the heart of the problem. In our opinion, attempts to eliminate the discrepancy between Federal salaries and those in private industry will not afford a complete, long-lasting solution to the need for engineers and scientists in Federal service. In addition to immediate or long-range salary increases, the Federal Government must afford the scientists and engineers professional recognition. Separate classifications systems and schedules must be established for professional employees so that separate identification and treatment in matters other than salary can create an atmosphere in Federal service which will compare favorably in all respects to private industry and other fields of endeavor.

The Cordiner Committee has recognized that Federal pay raises are imperative at this time, and has recommended that Federal employees at grades GS-7 and above be granted increases averaging approximately twelve per cent. This Committee Report has further stated that one of the basic principles of a modern compensation system is the maintenance of internal alignment; that is, the inter-relationship of many occupations in a wage structure and of the many levels in each occupation. In support of this principle the Committee Report has declared: "Recent proposals to establish separate salary schedules only for certain occupations apparently ignore the essential internal pay relationships between groups. Insofar as competitive private business rates are concerned, there is little difference between pay scales for scientists and other professionals. The Committee believes that a separate schedule of pay for professionals or others would violate sound principles of salary administration."

This proposition is one which must be faced up to realistically by the Congress if we are to achieve a sound and workable solution to the problem. In our complex modern civilization technological personnel are a key group, and the Government must be able to attract and retain qualified employees in that group to meet its defense and other essential needs. In the face of this well-accepted fact we cannot continue to pretend that there must be uniformity among all classifications for the sake of uniformity. Specialized professional personnel cannot be treated in the context of being just another element of the over-all picture without coming to the present unhappy situation we now face. We suggest that the Government cannot have it both ways—that professional skills are an indispensable element, the lack of which imperils our nation's security and progress, and at the same time insist that this same group be treated in the same manner and under the same conditions as general employees in other categories. There is nothing startling or new about the concept of classification and pay according to specialized knowledge and ability. The only question now posed is whether the Congress is prepared to recognize the emergent role of engineers and scientists as coming within that category of persons who, because of their unique place in our technological age, require a specially-developed system of identification and compensation. We think the Government agencies have over the past few years made the point crystal clear that such a time has arrived.

As we have stated earlier in our testimony, we believe the Federal Government is entitled to the very best engineering and scientific talent which is available. To assure that the engineers in Federal service are fully qualified for their positions by reason of education, training and experience, we believe their competence should be certified by qualifying as professional engineers as established by law in all the states, territories, possessions and the District of Columbia.

The National Society of Professional Engineers believes that where a professional field is clearly delineated by law, the Federal Government should accept and follow the line of demarcation between those who are legally qualified to practice the profession and those who are not so qualified. This principle is accepted in the case of the medical and legal professions, but not in engineering. With the extensive amount of Federal monies to be expended under the direction of engineering supervision and responsibility, the Federal Government has the duty to the taxpayer of assuring him of the competency of the engineering personnel involved. The state engineering registration laws have been adopted in order to safeguard life, health, and property and to promote the public welfare. This principle has induced the state legislatures and the Congress of the United States to recognize as a matter of public interest and concern "that the profession of engineering merit and receive the confidence of the public and that only qualified persons be permitted to engage in the practice of engineering" (quoted

(*Continued on page 47*)

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Tallamy

(*Continued from page* 16)

heard testimony based on practical engineering experience in the operation of high speed thruways.

In explaining the causal factors behind the planned-access highway, Tallamy makes much of the proposition that the interstate system is being designed as a highway system for the present and future. In past years, he points out, engineers built narrow, straight-line roads to handle the relatively small amount of vehicular traffic then in operation. The present Federal aid program is designed to develop connected interstate highways with the engineering standards that will make the system meet the vehicular transportation needs of today and tomorrow.

America's transportation network has come a long way in the several hundred years since the first settlers began pushing roads and canals into the wilderness. As Federal Highway Administrator Tallamy's roadbuilding program shifts into high gear, the engineering profession will be meeting one of its biggest challenges to date.—***End.***

Jackson

(*Continued from page* 21)

engineering, materials procurement, materials handling, inspection and shipment. It also involves shop planning, layout, and facilities as related to reduction of cost, increase in capacity, and improvement in quality. The objective of this assignment is to give the student a better understanding of manufacturing operations and an appreciation of the available engineering opportunities that manufacturing offers.

Upon completion of the course, placement in departments will be made with due consideration to the desires and qualifications of the student engineer as well as the best interests of the company.

The other division training courses follow similar patterns. Although details of this program may be changed as experience dictates, we believe it is typical of many being used today.

In all these programs, we try to give the engineer-in-training ample opportunity to learn and to demonstrate his interests and qualifications. The people with whom he comes in contact will be friendly and helpful. The impression he creates on them will, to a large extent, be within his own control and be an important factor in his development. We realize that the student engineer will neither be equally interested in nor equally qualified for all the assignments given him, but he is expected to so conduct himself that he will retain the respect and well wishes of his associates.

The engineering graduate's future success and happiness depends not only on how well he develops his personality to suit the changing conditions of life but also on how diligently he applies himself to the task at hand and those that lie ahead.

The engineering graduate, and all the rest of us, would do well to be guided by this fundamental precept: "No man is a failure . . . unless he stops trying."—**End.**

Friel

(*Continued from page* 24)

Commissioner who, like Mackie, fails to meet legal requirements.

"We see no more sense in letting go unchallenged, a seeming disregard of the law on a highway commissioner than we would if the qualifications for President or judge were to be ignored. A precedent is involved which, in its implications, is vastly more important to orderly government than some slight incommodity to the road-building program."

In an editorial in the *Saginaw News* a different approach was noted: ". . . The entire affair is another potent argument for the belief that the State Highway Commissioner should be an appointive official. For we greatly doubt that any commission would recommend, or any governor would think of appointing, any State Highway Commissioner who was not a well-established, competent, registered engineer."

There was one newspaper editorial comment on our suit which stated: ". . . What we need in the Michigan Highway Department is a good administrator. He does not need to be an engineer, in our opinion, because he can hire all kinds of technical help whether it be engineers, draftsmen, or cost accountants."

This is exactly the type of thing we are determined to eliminate. We must develop for our profession enough respect by the general public, including newspaper editors, so that we will not be looked upon as dime-a-dozen technical lackeys. Certainly, the Highway Commissioner must be a good administrator. But the law requires that the Commissioner personally supervise the design of the highways, bridges, etc., with which his department is concerned. It is difficult to see how a man who could not or would not take the State engineering registration examinations could command the confidence and respect of the public, his employees, and his colleagues. The whole concept of modern highway planning and design is closely tied in with departmental administration by an individual who qualified for the task according to the highest professional standards.

The question might be fairly raised as to whether the people who support the idea of a non-registered "highway administrator" would consider it satisfactory to have a dentist in charge of a physicians' clinic. Or perhaps these same people would approve of a situation where a physician acted as "administrator" for a firm of attorneys.

Our registration law has been flaunted too many times in the past. It is time we stood our ground, and insist that the provisions of the highway and registration laws be carried out. There can be no question that the responsibility for calling attention to a violation of the registration law must fall on ourselves as members of a professional society. We in Michigan are prepared to meet this challenge with all the resources available to us.—***End.***

About the Author . . .

Archie C. Friel

Archie C. Friel, born in Winnipeg, Canada, on July 4, 1911, was graduated from the University of Michigan in 1937. Following graduation he was employed as an electrical engineer until 1941 with Cummins & Barnard, Inc., Ann Arbor, Mich. From 1941 to 1943 he worked with contractors on Pacific Naval Air Bases in Honolulu, and with The Dow Chemical Company, Midland, Mich. He began work with his present employer, The Dow Chemical Company, Midland, Mich., in 1943 as an electrical engineer.

His term of office as president of the Michigan State Society expires this month. He was president of the Saginaw Valley Chapter, MSPE, in 1948. He is a member of the American Institute of Electrical Engineers, and has served on various committees of that organization. He has been chairman of the Board of Electrical Examiners and also chairman of the Electrical Board of Appeals, City of Midland, since 1951.

Testimony

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portion from Public Law 789, 81st Congress, 2nd Session). It would seem imperative that the Executive Branch of the Federal Government likewise recognize these principles for those in responsible engineering positions.

The National Society would be among the first to recognize the impracticability of the imposition of an across-the-board requirement of registration under a state law to qualify for an engineering position with the Federal Government. However, a start should be made in that direction and it is suggested that the first step should be the institution of a registration requirement for new employees or promoted employees to engineering positions at the level of Federal classifications which would require as a prerequisite approximately four years of broad and progressive professional engineering experience. We feel this would constitute a logical starting point as state engineering registration laws generally require four years of similar responsible experience to qualify for licensure as a professional engineer.

For this reason we recommend that the point at which registration as a professional engineer would be required, should be the proposed SPS-5. We have suggested this grade as the starting point for registration primarily for two reasons: First, it appears unlikely that a young engineer would progress through SPS grades 1 to 4, inclusive, in less than four years (at the end of which he would generally be eligible for state registration), particularly if it is realized that much of the rapid promotion in recent years has been due to the current low salaries in relation to those in industry, and that the only way to increase the compensation in order to hold these engineers in the Federal service has been through a more rapid than normal promotion rate. Second, the responsibilities associated with classifications of SPS-5 and higher are such that it would be reasonable to require that persons in these grades prove their competency for holding such engineering positions by meeting requirements similar to those established by state law. Since state licensure is required for persons performing the duties of, and occupying the positions of doctors and lawyers in the Federal service, it would operate to the benefit of the Government, the public and the profession to insist that engineers meet similar requirements.

This suggestion that a registration or licensure requirement for engineers be incorporated into Senate Bill 1326 is not unique. The Federal Government for many years has insisted on state licensure as a requirement for certain doctors, nurses and lawyers in the Federal service. For example, Section 202 of Public Law 603, 84th Congress, 2nd Session, providing appropriations for the Justice Department declares that: "None of the funds appropriated by this title may be used to pay the compensation of any person hereafter employed as an attorney . . . unless such person shall be duly licensed and authorized to practice as an attorney under the laws of a State, Territory, or the D. C."

Furthermore, the Act of 1946 establishing the Department of Medicine and Surgery in the Veterans Administration requires that persons appointed as doctors, dentists, nurses or pharmacists in the Department be either licensed or registered in one of the States or Territories or in the District of Columbia (See 38 USC Section 15d).

To give practical effect to our recommendation that a registration requirement for engineers be incorporated into S. 1326, we expressly request that the following be added as subsection (e) to Section 401 on page twenty-two of the bill:

> (e) For positions in the engineering series, on and after the effective date of this Act, no person shall be appointed or promoted to SPS-5, or a higher grade, unless such person is registered in accordance with the engineering registration law of a state, territory, or possession of the United States, or of the District of Columbia: *Provided*, That persons holding positions in the engineering series on the effective date of this Act may continue in their present grade (as converted to an SPS grade by Section 302 (a)), without complying with the above requirement.

The National Society of Professional Engineers sincerely believes that the adoption and implementation of the basic recommendations made here today will considerably enhance the position of Federal agencies in achieving a professional engineering force which will be not only adequate in numbers, but outstanding in efficiency of planning and operation. Adequate salary increases, in and of themselves, will not afford a complete solution to the existing problem. In addition, and might we add, in conjunction, Federally employed engineers must be afforded that degree of recognition as professionals to which they are entitled. For this reason, the National Society strongly endorses and supports S. 1326 as a logical program for the effective securing and retaining of an adequate professional engineering force in the Federal Government. Senator Johnston's Bill is sound in that it combines appropriate pay increases with recognition of professional employees by placing them in a separate professional classification schedule.

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Dupont's Engineering Department Takes a Forward Look at Professional Development—C. H. Evans, P. E. Reprint from American Engineer.

PROFESSIONALISM

How a Professional Attitude Can Be Instilled in Engineers—Dean W. R. Woolrich, P. E. Reprint from American Engineer.

Some Thoughts on Engineers and the Engineering Profession—Speech by Harry A. Winnie, P. E., vice president, General Electric Co. (Retired), presented at the 20th Annual Meeting of NSPE.

Significance of the PE Emblem

PUBLIC RELATIONS

Engineers' Week—Reprint from American Engineer (NSPE Believes).

Our Public Relations Responsibilities—Reprint from American Engineer (NSPE Believes).

There's Nothing Wrong With Engineers Reprint from American Engineer.

REGISTRATION

A Model Law for the Registration of Professional Engineers and Land Surveyors

Is Our Registration Requirement Limiting Membership?—Reprint from American Engineer (NSPE Believes).

Next Step Registration — Informative pamphlet for engineering students and others on values and procedure for engineering registration.

*Order from and remit to Professional Engineers Conference Board for Industry, 2029 K. St., N.W., Wash. 6, D. C.

Registration: Then, New and Tommorow—Frank H. Prouty, P. E., chairman, National Bureau of Engineering Registration. Reprint from American Engineer.

Professional Engineering Registration Laws—A compendium compiled by Alfred L. McCawley in cooperation with NSPE. Available from A. L. McCawley, Box 474, Jefferson City, Missouri—$8.75.

SALARY SURVEY

Digest of 1956 Salary Survey—Pamphlet highlighting the full report.

Professional Engineers' Income and Salary Survey—1952-1954-1956 statistics covering NSPE members—50¢ each (members). (Available in July, 1957.)

STANDARD FORM OF AGREEMENT

Standard Form of Agreement Between Owner and Engineer for Professional Services—Price—5¢ each.

TECHNOLOGY

The Case for Technology—Brig. General David Sarnoff. A factual answer to those who believe that the path of technology could lead to ruin. Reprint from American Engineer.

TRAINING

***How to Train Engineers in Industry**—Executive Research Survey. Number Four. This report reflects the experience of more than 200 companies which employ engineers, as well as of many individual leaders in the training field. Price—$1.00 (members).

UNITY

Unity for Professional Action — Reprint from American Engineer (NSPE Believes).

Professional Organization of Engineers—Reprint from American Engineer.

VOCATIONAL GUIDANCE

Annotated Vocational Guidance Bibliography — Listing of current pamphlets and books of interest to counselors and prospective engineering students.

Do We Have Enough Engineers? Reprint from American Engineer (NSPE Believes).

Engineering . . . A Career of Opportunity—A general vocational guidance pamphlet.

Engineers for the Future—Reprint from American Engineer (NSPE Believes).

List of Accredited Engineering Schools—Reprint from ECPD Annual Report.

*Order from and remit to Professional Engineers Conference Board for Industry, 2029 K St., N.W., Wash. 6, D. C.

Honeywell

(*Continued from page 29*)

in-Industry Section. The NSPE Legislative Counsel made a special trip to Minneapolis to confer with the professional leaders of the group, arrangements were made by NSPE for a talk by a member of its Engineer-in-Industry Committee in Minneapolis on the opportunities of engineers to work with their companies regarding their problems on a professional basis, quantities of literature and the Taft-Hartley Act were supplied, and other information and comment was provided as requested during the campaign period.

Because of the special importance of this development, arrangements have been undertaken to publish a first-hand account of the history and campaign prior to the election in a future issue by one of the leaders of the professional group.

By Popular Demand

A HANDY AND DISTINCTIVE BINDER FOR 12 ISSUES OF THE AMERICAN ENGINEER

Now you can build an easy reference to the many fine articles and features which appear in the American Engineer by slipping your monthly issues into this new handsome maroon (silver lettered) DuPont fabricord binder.

The binder has 12 removable heavy-tempered flat steel rods and solid nickeled screw posts on each end which are easily operated. Though rugged, the binder is beautifully finished and has a reinforced stiff back which is lined for greater wear.

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What's New

This column describes new products of general interest to professional engineers. For further information, circle the item number on opposite page and mail to the AMERICAN ENGINEER.

These listings are informational and are not an endorsement of the products, nor of the manufacturer's claims.

MOVER AND SCRAPER — Item 30

The newest addition to Caterpillar's line of rubber-tired earthmoving units is the DW15 (Series E) and No. 428 Scraper. This prime mover and matching scraper combination offers increased load capacity, higher speeds, and greater tractive ability. The tractor incorporates design changes in the engine and power train.

PORTABLE PAINTING UNIT — Item 31

"Twin Tuffy," a new portable spray painting unit designed for medium jobs by contractors or big jobs by the do-it-yourself fan, has been announced by The DeVilbiss Company. Designed to produce high air delivery for its rated horsepower, the "Twin Tuffy" has a ½ hp electric motor with double shaft which runs two ¼ hp diaphragm-type compressors. With actual delivery of 4.6 to 5 cu. ft. of air per minute, the new unit is fitted for medium production guns.

TRACING PAPER — Item 32

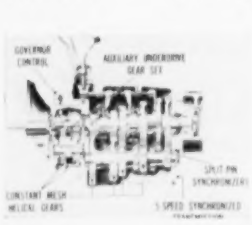
A new resin-transparentized, 100 per cent rag content tracing paper under the trade name "Visi-Vel" is now offered by the Charles Bruning Company, Inc. Drawing made on this paper can be filed indefinitely without deterioration of the drawing. It will not become brittle or discolor with age.

PORTABLE COOLING SYSTEM — Item 33

The Spray-Cooler, a low cost, easily portable cooling system for metalworking machines, has been introduced by the Triple-E Engineering Company. Employing the spray cooling principle, whereby finely atomized particles of coolant are directed at the point of cutting, the unit has been successful in prolonging tool life from 50 to 500 per cent. Of stainless steel construction throughout, the Spray-Cooler is highly resistant to corrosion.

SEMI-AUTOMATIC TRANSMISSION — Item 34

To fulfill transmission requirements of highway trucks, Clark Equipment Company's transmission Division has developed the "StepMatic," a new semi-automatic heavy duty truck transmission which minimizes shift lever and clutch pedal manipulation and reduces the need for skilled gear shifting. The StepMatic has a five-speed synchronized transmission and an auxiliary gear train.



CYLINDRICAL SLIDE RULE — Item 35

Arthur F. Smith Co. announces the introduction for the first time in this country of a cylindrical calculator with an accuracy greater than any slide rule currently on the market. By spiraling the scales around a tube instead of in a straight line, it achieves graduations equal to those of a 66-inch slide rule. The instrument can be opened to 10¼" by 1¼"; its size when closed is only 6" by 1¼".

CABLE CLIPS — Item 36

New instant clips developed by the Weckesser Company make fast work of cable and tube anchoring operations. The installer simply pinches the ends of the black nylon clip together, inserts it in a mounting hole and lets go. All the advantages of nylon are incorporated in the one-piece clips. They have excellent insulating properties, toughness over a wide range of temperatures, resistance to corrosion, and are non-magnetic.

LIFT TRUCK — Item 37

The Yale & Towne Manufacturing Company has announced the development of an all new line of 15,000 to 20,000 pound capacity gasoline powered, pneumatic tire lift trucks. Outstanding among the many new features in the Yale G-3 line are the channel construction which provides 300 per cent more visibility for the operator, and more load stability.

CONTROLLED DAYLIGHTING — Item 38

Wasco Products, Inc. has developed a new material, Solatex Silver, which provides the controlled daylighting sought by architects and engineers. This overhead daylighting material reduces glare and the variation in light received at different hours of the day as well as objectionable heat. The first major development in skylighting since the introduction of Skydomes by Wasco in 1950, it will be used in Wascolite Reflectadomes.

SPRAY GUN — Item 39

A mobile pneumatic masonry spray gun especially designed for multiple-purpose, large and small-volume application is now available. Applying up to 3½ cu-yd per hr, the gun will mix and spray stucco and plaster; apply cement coatings and build concrete walls; pump insulating roofing or floor topping; grout walls, machine bases or earthworks; and perform wet sandblast operations.

American Engineer

Readers' Service Department

Here's How Busy Engineers Can Keep Up-to-Date . . .

Registered, professional engineers *are* busy people but their careers demand that they "stay on top" regarding new products and new developments. We hope that our new READERS' SERVICE DEPARTMENT will help our more than 42,000 readers do just that.

HOW WILL IT WORK?

It's easy. You will notice that each advertisement in this issue makes reference to a number used on the card below. If you want more information about any ad simply circle the corresponding number on the card and MAIL PROMPTLY! Read the ads in this issue NOW and then complete the card below and drop in the mail. The information you want will be on its way to you within a matter of days.

TODAY'S TECHNOLOGY MOVES FAST—KEEP INFORMED

AMERICAN ENGINEER
2029 K Street, N.W.
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JUNE

Please have information sent to me on items circled below:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
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31	32	33	34	35	36	37	38	39	40

Additional Remarks: .....

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Company Name .....

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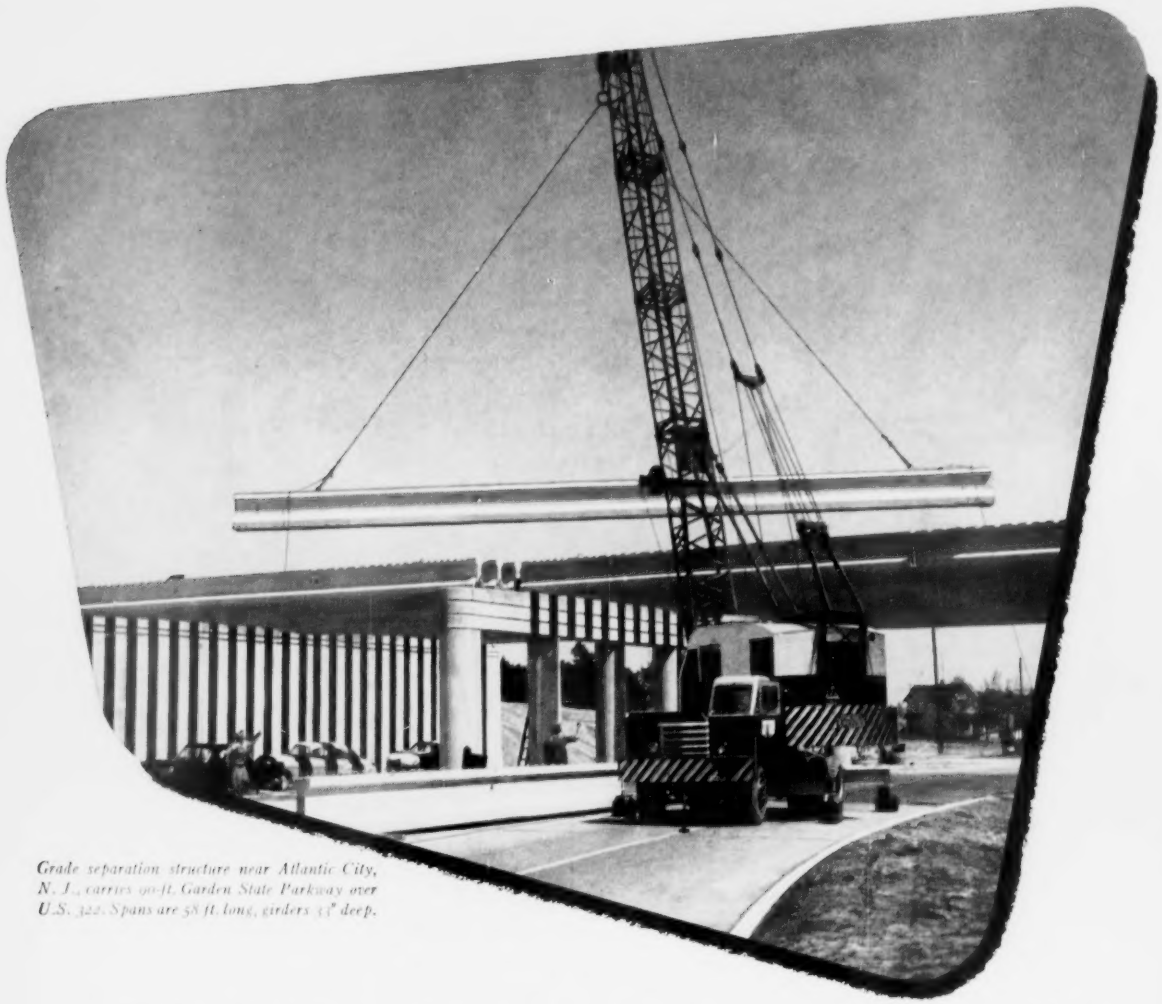
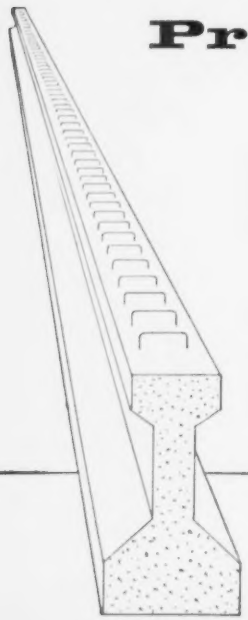
City ..... Zone ..... State .....



Grade separation structure near Atlantic City, N. J., carries 90-ft. Garden State Parkway over U.S. 322. Spans are 58 ft. long, girders 33" deep.

Extra bridges from your highway budget with

Prestressed Concrete



Thousands of bridges, grade separations and trestles must be built on the National System of Interstate and Defense Highways. Engineers should know how to get extra bridges from their highway budgets.

One way to make substantial savings is to use a basic design for most bridges. Production line techniques then can be employed to lower unit costs of fabricating precast, prestressed concrete members. Using a standard design will also save designers' valuable time, freeing them for work on other projects.

Prestressed, precast concrete eliminates the need for expensive falsework. Since members are smaller, dead weight is reduced. This simplifies transportation, speeds erection. Having unusual durability and requiring little maintenance, prestressed concrete bridges deliver ***low-annual-cost*** service. Send for helpful free literature. It is distributed only in the United States and Canada.

Portland Cement Association

Dept. 6-99, 33 West Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

(Circle 7 on Reverse Cover)